WELL SURVEILLANCE

Technical Guide

March 22, 2013

TABLE OF CONTENTS **Page**

Appendices

GLOSSARY

AFIT = Arsenic Filter Installation Tests
BACT = bacteriological sample
CHD = County Health Department
CDV = cattle dip vat
Community Public Supply Well = A well that supplies a water system serving at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents
DCEH = Division of Disease Control and Health Protection, Bureau of Environmental Health
DEP = Department of Environmental Protection
DEP Public Supply Well = A well that supplies a water system serving 25 or more individuals daily or 15 or more service connections (Regulated under chapters 52-550, 62-555, 62-560, and 62-524, F.A.C.). These wells fall into one of three categories: Community, Non-Transient Non-Community (Non-Transient), or Transient Non-Community (Non-Community)
DGPS = Differentially Corrected Global Positioning System
DSCP = Drycleaner Solvent Cleanup Program
DOH = Department of Health
DWTP = Drinking Water Toxics Program
EDB = ethylene dibromide
F.A.C. = Florida Administrative Code
FLUWID = Florida Unique Well Identification Number
GAC = Granulated Activated Carbon
GPS = Global Positioning System
HAL = Health Advisory Level
Limited Use Public Supply Well = A well serving a water system regulated under Chapter 64E-8, F.A.C. that serves less than 25 individuals daily and fewer than 15 service connections, and that provides water to :
1) one or more nonresidential establishments, or
2) five or more private residences, or
3) two or more rental residences

MCL = Maximum Contamination Level
mg/L = milligrams per liter
NO_2 = Nitrite
NO_3 = Nitrate
Non-Community Public Supply well = A well that serves a DEP Public Water System that is not a Community or a Non-Transient Non-Community Public Water System. More formally known as a Transient Non-Community Public Supply well.
Non-Transient Non-Community Public Supply Well = A well that supplies a DEP Public Water System regularly serving at least 25 of the same persons over 6 months per year.
P505 = Chlorinated Pesticides Analysis Method
Private Well = A well that serves a water system that provides piped water to one or two residences, one of which may be a rental residence.
PWS = Public Water System
Semi-VOC = Semi-volatile Organics (EPA method 525)
SUPER Act. = State Underground Petroleum Environmental Response Act
Toxics = Drinking Water Toxics Program
µg/L = micrograms per liter (also abbreviated as ug/L)
VOC = Volatile Organic Chemicals
WC = Waste Cleanup Program

Chapter 1 - Introduction

The Well Surveillance Group within the Bureau of Environmental Health's Water and Onsite Sewage Section manages several programs to identify and monitor areas in Florida where contaminated drinking water is suspected and may pose a threat to public health. The Well Surveillance Group is composed of the State Underground Petroleum Environmental Response Act (SUPER Act), Drinking Water Toxics Program (Toxics), Drycleaner Solvent Cleanup Program (DSCP), Waste Cleanup Program (WC) and other water programs beyond the scope of this Technical Guide. The program office coordinates with the County Health Departments (CHDs) to locate potable wells and conduct water sampling for contaminants of concern. Chemical analysis of water samples is conducted at the Department's laboratory in Jacksonville.

This technical guide is prepared as a reference manual and training guide for DOH staff. This guide is intended to define acceptable protocols and practices consistent with the goals of the program. Compliance with these standards will be evaluated at each County Health Department.

SUPER Act Program

In 1986, the Florida Legislature created the SUPER Act Program in response to groundwater contamination resulting from leaking underground petroleum storage tanks. The primary authority for the SUPER Act program was given to the Florida Department of Environmental Protection (DEP). The DEP oversees the clean-up activities around petroleum facilities that have had a loss of petroleum product. The Department of Health (DOH) was given authority to provide field and laboratory services, toxicological risk assessments, investigations of drinking water contamination complaints, and public education (376.3071(4)(g), F.S.). In July 2005, the DEP contracted with the DOH to conduct well surveys and sampling around known or suspected contaminated facilities. A major portion of the contract is dedicated to conducting investigations for the purpose of prioritizing cleanup funding in accordance with Chapter 62-771, F.A.C. (Priority Ranking Rule). Funding for SUPER Act is provided through the Inland Protection Trust Fund.

Drinking Water Toxics Program

Discovery of extensive groundwater contamination of wells with ethylene dibromide (EDB) in the early 1980's led to widespread public concern about the water quality of Florida's private potable wells. The Florida legislature enacted the Water Quality Assurance Trust Fund in 1983 to protect public health and the environment. This trust fund gave the DEP the responsibility to investigate wells or areas that may be at risk due to chemical release and to provide an alternative water source to a homeowner whose well is found to contain contaminants above the primary maximum contamination level (MCL) or health advisory level (HAL). The program is limited to anthropogenic chemical contaminants that present an unacceptable risk to the homeowner by any source not already covered by another program (i.e., SUPER Act, drycleaner, lead, bacteria). In July 2005, the DEP contracted with the DOH to perform sampling of residential potable wells and to provide information and support to the homeowner and the DEP.

Drycleaning Solvent Cleanup Program

In 1994, The Florida Legislature established the state-funded Drycleaning Solvent Cleanup Program (DSCP) to clean up properties that are contaminated as a result of the operations of a drycleaning facility or wholesale supply facility. The program is administered by the DEP. The statute was sponsored by the drycleaning industry to address environmental, economic, and liability issues resulting from drycleaning solvent contamination. The DEP is now requesting investigations of specific drycleaning facilities at sites being considered for cleanup.

Program Goals

The objective of the well surveillance program is to protect the health of Floridians and visitors to the state from potential contaminants in their drinking water. Each CHD is responsible for implementing the SUPER Act, Toxics and Drycleaner programs for its county unless prior arrangements are made for other counties to assist.

To achieve these goals, the CHD staff must be adequately trained in field sampling methods, the use of software programs and use of Global Positioning System (GPS) equipment.

The well surveillance program is composed of five activities: well surveys, complaint sampling, monitoring areas of concern due to known contamination, public information, and assisting DEP with remediation. These activities will be described in detail in the following chapters.

Chapter 2 - Well Surveillance Overview

Well Surveys

The goal of a well survey is to identify potable wells within an area and to sample a sufficient number of representative wells to determine if ground water contamination is present. Well surveys represent the largest single function under the DEP/DOH contract. Depending upon availability of funds, 2,000-4,000 well surveys are completed each year. The purpose of well surveys is to:

1) Assist DEP in creating and maintaining a risk-based prioritization system of contaminated sites to determine the order of cleanup.
2) Identify wells within an area that are potentially at risk for contamination.
3) Sample a representative number of wells sufficient to identify and delineate any contamination plume that may be present.

Most CHDs will receive regularly scheduled requests from the program office to conduct a well survey around a specified facility, risk source or contaminated well. These CHDs are expected to complete the survey and any associated sampling by the due date given on the request.

A well survey should locate the facility or risk source(s) and representative wells. The well survey should:

1) Locate the facility or risk source requested and GPS if necessary;
2) Locate (and GPS if necessary) <u>all</u> potable wells within 500 feet of the facility or risk source;
3) If there are fewer than ten wells within 500 feet, up to ten potable wells should be located within ¼ mile;
4) <u>All</u> large (>150,000 gallon per day design capacity) Public Water Supply (PWS) wells within 1/2 mile.
5) Occasionally, if requested by DEP or the program office, a CHD will be asked to step out to ½ mile to locate ten representative wells.

Samples should be collected from up to ten potable wells, if present. Wells should be selected to provide surrounding coverage and priority should be given to wells closest to the source or PWS wells.

Complaints and Investigative Sampling

The CHDs are the main point of contact for residents having health concerns about potable water. The Well Surveillance Program provides funding for CHDs to pursue reasonable investigations. In addition, the legislators have established funds specifically for sampling of newly installed potable wells within certain areas defined in chapter 62-524 Florida Administrative Code. However, use good judgment when beginning a complaint investigation. The program is <u>not</u> an extension of the mortgage industry or a subsidy for private homeowners.

Each well owner is responsible for their own well. Florida provides support to help people who have non-naturally occurring contamination through no fault of their own. For a citizen-initiated complaint, the CHD should respond within two working days (or earlier, if required by local rule or policy). Field personnel should try to determine if there is an observable water quality issue

(i.e. odor, color, film, taste, etc.) that would indicate a potential problem. Interview the complainant to determine why they believe there is a problem. Investigate leads of potential problems in the neighborhood. Based on the interview, CHD personnel will determine if a sample should be collected and for what parameters. If there is no probable cause, then direct the homeowner to a private laboratory. The DEP website provides a list of certified laboratories. It is very important to document observations and conversations regarding a particular complaint and to be sure to consult with program office staff prior to sampling to get approval.

A few counties have delineated zones as defined by Chapter 62-524 F.A.C. All newly-constructed wells within the zone must meet strict construction requirements and have a sample collected by the CHD as part of the permit process. Newly-constructed wells in a delineated zone should have samples charged to TOX-EDB-524. CHDs can locate delineated zones located in their county by using EHWater. EDB sampling for other than newly installed wells in delineated zones should be charged to Tox-EDB-invest.

With permission from the program office, CHDs may also initiate an investigation based on their knowledge of their area and/or documented complaints. CHDs should focus on areas where wells are near chemical plants, petroleum facilities, drycleaners, farming operations, or chemical spills. One or two samples collected from nearby potable wells could detect migrating plumes. For potable wells in the vicinity of active, known petroleum contamination sites it is good practice to sample two to four representative wells at least every three years, even if contamination has not been found in the past.

Re-Sampling and Confirmation Samples

Confirmation samples should be collected for wells that exceed the MCL or HAL. Confirmation samples are run to ensure the detected chemical is not the result of lab error, cross-contamination with other samples, small spills immediately around the well head or other instances where the hit is a one-time occurrence. They should <u>not</u> be run in the following circumstances:

- MCL/HAL for Nitrates, Total Trihalomethanes (THMs), or secondary metals
- If the well is located in an area of known contamination (unless otherwise requested by the program office or DEP)
- If the well has a history of contamination just below the MCL/HAL

Re-sampling will be performed on potable wells with confirmed concentrations greater than ½ MCL/HAL (or greater than $^{8}/_{10}$ MCL for nitrates or arsenic). Due to budget restrictions, the program office will schedule re-sampling of wells. CHDs will receive this information two ways: 1) on the weekly e-mail Well Tracking list, or 2) as an e-mail discussing the Well Surveillance Area (WSA) as a whole. The program office needs the observations and the first hand knowledge of these sites to accurately administer the sampling program. CHDs should respond to the e-mails if there are any changes or observations that may affect the interpretation of the site. Also, if the CHD believes that certain wells not on the well tracking list should be sampled routinely, they should consult with the program office for approval.

Confidential Information

Confidential information may include, but not be limited to: medical complaints; contact information for law-enforcement officers, judges, and prosecutors. This information should be handled with extreme care. Any record that must be transmitted or stored in a place where it

may be seen by others (laboratory request forms or results) may not have ANY personally identifiable information. Confidential information that may be required to do an appropriate investigation is to be given out on a strict need-to-know basis to authorized staff only. Personally identifiable information may include, but not be limited to:

Name
Address
Social Security Number
Property ID
Telephone Number
Well permit number

Additionally, although a FLUWID shall be assigned to the well, the FLUWID tag should not be affixed to the well. The FLUWID tag and all records (including GPS location and address) shall be placed in the file and stored with the designated Confidential Records Custodian. Each CHD should have a designated person with access to a locked file cabinet. A confidential identifier code should be established by the county.

Except for the confidential identifier code, no identifiable information is to be entered into the program office database or the lab submittal form. At most, only the FLUWID, city, sampling information, and results should be entered. The name and address fields shall be entered as confidential identifier code, "Confidential" or some similar notation. The actual GPS location, if recorded at all, should be stored in the confidential file that is retained by the confidential records custodian. A public location will be established, which will be at 28° N 84° W (this is a point in the northern Gulf of Mexico). The public location enables the data to be processed within existing procedures without compromising the confidential information..

Note that the state email system is considered public record. Personally identifiable information may not be sent via email unless it is encrypted. Otherwise, it must be sent by interoffice courier in a sealed envelope or by hand. Most supervisors have encrypting keys.

Notification

CHDs must notify the potable well owner of chemicals detected in their well and help them understand what effects these chemicals could have on their health. CHDs must contact the resident/owner within 24 hours of their notification by the Jacksonville DOH lab if the contaminant exceeds (first sample) a primary MCL or HAL. No matter the concentration, CHDs must send a letter informing the property owner of the analytical results for each sampling event. The letter should include the analysis report and an explanation of how to read the report. If there are elevated levels, it is recommended that the appropriate “water fact sheets” be included in the notification letter. See appendix E for a list of available fact sheets.

Well Restoration Assistance

Once a concentration greater than an MCL/HAL (excluding secondary MCLs or THMs) has been confirmed, the DEP is responsible for remediation. However, the CHD may be requested to assist by talking to the residents/owners, delivering bottled water coupons or bottled water directly.

A Note on Secondary Metals and Trihalomethane MCLs

DEP's water supply and restoration program does not offer assistance to well owners whose wells have high levels of trihalomethanes (THM's), secondary MCLs (SMCLs--such as iron, aluminum, or total dissolved solids) or bacteria. THM's are almost invariably caused by halogen disinfection of the water while SMCLs are based on aesthetic or cosmetic effects rather than any health-related reason.

Summary of Activities

Well Surveys

- GPS designated facility or risk source (if necessary).
- Locate and GPS all potable wells within 500 feet of the facility or risk source.
- Sample up to 10 potable wells, if present, within ¼ mile of facility or risk source.
- Locate and GPS all PWS wells within ½ mile.

Investigative Sampling

- Evaluate all citizen potable well complaints to determine if sampling is warranted and consult with the program office prior to sampling for approval.
- GPS and sample newly installed potable wells within delineated zones. GPS and sample nearby potential sources of contamination.

Re- Sampling

- If any potable wells sampled around a requested facility/well surveillance area have an MCL/HAL, a confirmation sample may be needed.
- Perform sampling and GPSing of wells within Well Surveillance Tracking areas as directed.
- Communicate observations and suggestions about Well Surveillance Tracking areas.
- Perform sampling at filter systems as directed by the DEP.

Notification

- Notify the property owner of the analytical results every time their well is sampled.
- Owners must be notified within 24 hours if there is an MCL/HAL violation.

Water Restoration Assistance

- Assist the DEP in getting permission to provide alternative water supply.
- Distribute bottled water coupons, filled bottled water containers, or a temporary water supply as needed.

Chapter 3 - Locating Wells

Preliminary Office Activities

The following preliminary office activities will help reduce the time in the field and greatly aid in completing an accurate well survey.

1. Determine the location of the facility, risk source or property. The following resources should be consulted:
   a) Oculus (http://dwmedms.dep.state.fl.us/Oculus/servlet/login)
   b) EHWater (http://deh00swbgis99/EHWater_Flex_Test/index.html)
   c) *.kml files (\\deh00sfp01\HSE_Public\Hsew\WellSurveillance_KML_Files\)
   d) Previous well surveys conducted in the area and found in LaserFiche or Oculus

2. If there is currently location data for the facility in question, use EHWater or the kml files (open in GoogleEarth) to check the location. If the point is located correctly (within 5 meters), do not re-GPS it unless there is an overriding reason to do so.

3. Use the EHWater or the kml files to identify any known potable wells within ¼ mile of the facility (and large DEP PWS wells located within ½ mile). The CHD will need to confirm the location of each known well and be able to identify any discrepancy between the program office database and what is actually in the field.

4. Use other available resources to help identify potential potable wells in the area. These may include, but not be limited to:
   a) Local property appraiser data.
   b) Local utility water meter listings.
   c) Local well permitting databases (typically the local Water Management District).
   d) Utility franchise boundaries (available on EHWater).

5. Search Oculus to find site histories including previous DOH well survey submittals, facility site assessment reports containing consultant well surveys, maps showing leaking tank/ contamination area and other documents. Review the site assessment reports regarding possible plume (s) and their groundwater flow direction.

6. Keep an updated copy of all DGPSed wells by FLUWID # and by Street address. Take this list with you when in the field to confirm status of wells in the area you are visiting.

7. Before going into the field, check all equipment that may be used. This will include a GPS unit with charged batteries, measuring device, maps, DEP FLUWID tags, sample bottles, DOH authorized field notebook or other authorized recording system, and sample permission door hangers.

Field Activities

1. Use only the GPS unit approved by the Well Surveillance section. These units are differentially corrected GPS (DGPS) which complies with DEP guidelines. The operator should be trained and certified by the program office. Appendix B provides the Solo Office and Solo Field manuals.

2. If an accurate GPS point does not already exist, GPS the facility or risk source. Petroleum sites should be centered around the oldest discharge point if it can be located (or unless otherwise directed). Drycleaner sites should be centered at the back door. Oculus should have site plans or sketches for most petroleum and drycleaner sites.

3. All potable wells within 500 feet should be GPSed. If there are fewer than ten wells, continue searching out to the ¼ mile (or as otherwise requested). Sample up to ten wells in accordance with the guidelines in Chapter 4.
   a) If you can not get access to the well property, assign a FLUWID number and GPS at the center of the property along the street. Store the FLUWID tag in your files until you can obtain permission.
   b) If there is no address for the property, use the parcel identification number. All counties should have a property appraiser website where these numbers are available.
   c) Wells which are <150,000 gpd and have been sampled within a year will count as part of the ten required wells, but do not need to be resampled.

4. A sample should be collected from each large (>150,000 gpd) Community PWS well located within ½ mile unless the well has been sampled within the past 3 years or has contamination.

5. If several wells are clustered together or on a line radiating out from the facility, it is not necessary to sample all ten wells. A smaller number may serve as a representative sampling.

6. Keep a list of all potable wells in your county by FLUWID # and by address to confirm that the well has a FLUWID # or the number or status of the well has changed. A list of wells can be downloaded from http://www.superact.org. You may also contact the program office for a list.

   A note on re-tagging wells: Wells that are assigned a FLUWID, but no longer have one visible on the well should not be re-tagged. Wells that have been assigned a 9-digit Water Supply and Restoration (WSRP) ID number should be tagged with a proper FLUWID and re-GPSed. Carrying the lists noted above with you in the field will help you avoid retagging a well which has already been issued a FLUWID.

Permission Issues and Record Keeping

You **must** obtain permission from the owner or resident to tag, GPS, and/or sample all private wells. Efforts to obtain permission may include contacting the resident/owner on a field visit, placing door hangers, sending letters, and making phone calls. The owner name and mailing address is available through the tax collectors office.

Keep a record of all permissions, attempts to contact private property owners, or refusals. DEP requires that this information be included in all well surveys submitted to their office. This information is also useful when again trying to sample these refusal or non-permission wells in the future. CHDs may also consider keeping a list for regular rechecking of these wells to see if sampling is possible (particularly in contaminated areas). Records should include the following:

- Denial of permission: identify the person, address, and date. Please make a note of the reason for refusal if possible. This information will be required on the final well survey document.
- Date and address of door hangers left or follow-up site visits.
- Address, date, and phone number of attempted mailed or phone contacts.

You should record comments from the property owner about the well or site (such as peculiar tastes, odors, changes in water quality), or in the neighborhood (unusual activities or potential discharges of contamination).

Abandoned vs Inactive Wells

It can often be difficult to determine whether a well is temporarily or permanently out of service. This determination, however, can have significant effect on the priority score for some sites, so it is important to ensure that we make the decision based on the best information available.

To make sure that everyone is on the same page, please use the following definitions:

Active Well The well is being used on a regular basis or will be used within a reasonable period of time (2-3 months).

Inactive Well The well has not been regularly used within the past 6-12 months, but is maintained in such as state that it could be used.

Abandoned Well Use of the well has been permanently discontinued or the well is in such a state of disrepair that it cannot be used for its intended purpose or for observation purposes.

Active vs Inactive Wells

While both active and inactive potable wells are shown on well surveys, they are not handled in the same manner by DEP when scoring a site. Therefore, it is important to do our best to determine the appropriate status. Wells are often determined to be inactive when the property is vacant. Some of the things to consider (but not an exhaustive list) are below:

- How long has the property been vacant?
- How well is the property being maintained?
- What is the condition of the structures on the property?
- Is there evidence that the property will become occupied in a short time period? *Example: there is a "For Rent" sign in the front yard.*
- Does the property owner or agent visit periodically to maintain and check things out?
- Is it possible that the property is being used for a different purpose from what it may be zoned for or have been used for historically? *Example: a former gas station where the owner uses it for his woodworking hobby would best be classified as "active."*

In addition, utility wells are often disconnected from the system for various reasons. Some of the things to consider are below:

- Standby/emergency supply wells. Are they exercised and plumbed into the system on a regular basis (active) or are they kept strictly for emergency purposes and need work to make them functional (inactive)?
- Down for maintenance—how long is the maintenance expected to take?

Inactive vs Abandoned Wells

Abandoned wells do not show on well surveys. It is assumed that an abandoned well has been (or will be) plugged, making it impossible to use, though this is by no means absolute. This is not a regulatory program, so the determination of whether a well is abandoned should be made with caution. Note that some CHDs have contracted with the local water management districts

and are the permitting authority, so their determination may carry more weight. However, if in doubt whether a well is abandoned or is merely inactive, it is best to leave it as inactive.

If the well has been plugged or the local permitting authority has sent a letter instructing the owner to plug the well, then it is abandoned. Also, if a utility well has been removed from the system, and the PWS authority has stated that the well will not be used by the system again, then we can safely call the well abandoned.

Post-Fieldwork Office Activities

Survey Completion

There are two things required for a survey to be considered complete: field work and sampling. If field work (not including sample collection and analysis) for a survey has been completed, notification must be sent to the Global GPS data address (HSE_GPSdata@doh.state.fl.us). Either of the following will trigger a draft map and survey to be made:

1. GPS data for the facility or risk source in question. The facility or risk source should be the last data sent as this will initiate map generation. To avoid redundant work, please make sure that any new well GPS data associated with the survey has been sent prior to, or at the same time as, the facility data. Please don't send facility information first.
2. If the program office already has accurate GPS data for the facility, an email should be sent stating simply that all work has been done for that facility.

The sampling data is received via an annotation in Laserfiche (sticky note or text box is preferred). Once the draft map has been signed off and the status changed to "Completed by County", the sample date is entered into the database. Further details on Laserfiche can be found below and in appendix C.

GPS Data

Connect the GPS unit to a desktop computer. After uploading the .udf file data into SOLO Office and checking the accuracy of the data, export the data files for each facility and well into separate text files for submittal via e-mail. The SOLO Office manual provided in Appendix B has more details. It is recommended you verify the GPS locations using the kml files which will open in the Google Earth mapping program. Only udf and text files (not the kml files) should be sent to the program office.

Use the format examples ##RSyymmdd.txt and ##Wyymmdd.txt for facilities and wells, respectively. In these examples, the first two digits of the file (##) correspond to the county number, the letters indicate Risk Source (RS) [the same as a facility] or well, and the last six digits signify the year, month and day collected. E-mail <u>both</u> .udf and .txt files to the program office with a brief explanation for the files such as: "correction of file sent previously", "three facilities", "one well", "files you requested for Toxics," etc.

Well Status/Information Changes

Any changes in well status—such as a previously-GPSed well becoming inactive or abandoned, a residence connecting to public water, or a name or address change—should be e-mailed to HSE_GPS_WellCorrections@doh.state.fl.us.

Web Laserfiche

Laserfiche is document archiving and retrieval software that allows you to archive numerous documents electronically, and also permits you to add annotations to the archived documents. Web-based Laserfiche is a portal that gives CHDs access to these documents via the intranet. For more information on the use of Laserfiche, see Appendix C.

The well surveillance program uses Laserfiche for two purposes: 1) archiving of important documents and 2) allowing counties to view current well survey requests and annotate any information that is pertinent to completing the well survey. Both of these uses will be explained below. Prior to using Laserfiche, you will need to obtain a user name and password. Contact information may be found in Appendix G.

Using Web Laserfiche to access archived documents

1. In order to access Laserfiche, browse to http://dohswapeh0001/Laserfiche8
2. Log in using your user name and password
3. Once logged in, you will see a list of folders in the left pane of the browser, and the same folders in the right pane of your browser. You should see the following folders:
    - Contamination Areas (archived maps/reports for Well Surveillance Areas)
    - County Evaluations (archived evaluations for each county)
    - County Working Files (where current requests are kept and annotated)
    - Facilities (archived requests) – these are the finalized well surveys sent to DEP which you can print out for your records
    - Draft Requests – Archived well surveys that the CHD has signed and annotated
    - State Working Files – where requests are QA'd and prepped for DEP.
    - Send to DEP in Process – where files that have undergone final QA review are held prior to sending to DEP).
4. To find an archived document, navigate through the folder structure or use the search feature.
5. Double-click on the document on the right pane to open up the document.
6. If you want to save and/or print the document, export the file as a pdf by clicking on Export (in the menu above the report pane) and then selecting PDF.

Using Web Laserfiche to complete active Well Survey Requests

1. Browse to http://dohswapeh0001/Laserfiche8 and log in using your user name and password
2. Double-click the "County Working Files" folder, then double-click on your county folder.
3. Double-click on the well survey request that you want to complete.
4. Add the appropriate annotation (sticky note or text box) to the following:

a. Any well that was sampled. Put the sample date (adding the sample ID is recommended, but not required). If the draft survey states that the sample meets contract specifications, you do not need to annotate.
b. A well where you could not obtain or were denied access. Write a brief statement describing what happened and include date(s).
c. Any information that we should be aware of, such as name changes, address changes, wells that are abandoned or inactive, have converted to central water (note current use, if any). If you need to add much more detail, send an email to HSE_GPS_WellCorrections@doh.state.fl.us. and to the program office staff assigned to your CHD.

5. Place your electronic signature on the "investigator signature" line on the survey. Reference Appendix C for instructions on how to create and use your electronic signature.
6. On the left of your browser window, there will be a number of blank fields associated with the request. Fill those fields out. Change the "status" field to "**Completed by County.**" The site will remain on the unfinished status list until this step is completed.
7. If you want to save and/or print the document, export the file as a pdf by clicking on Export (in the menu above the report pane) and then selecting PDF.
8. Close the survey. Click "**YES**" when prompted to save your changes.

Program office staff will periodically browse through all county folders looking for surveys that have been marked "Completed by County". They will be moved out of your county folder and into the QA process once they have been completed.

Chapter 4 –Sample Collection

Guideline for Collecting Samples

The following are guidelines you should be aware of before sampling:

1. Unless otherwise specified in the sample instructions or requested by the program office (i.e. filter samples), samples collected under this program should be raw water. Samples collected after treatment may show misleading results.

2. Reimbursement for sample collection may be delayed until a proper FLUWID tag has been attached and the well has been GPSed. If you are not sure about a particular well, please contact the program office or download the Wells table from the http://superact.org. **If no well exists at the address on the Wells Table, please GPS and tag the well.**

3. Each type of analytical scan has a specific bottle(s), preservative, temperature requirement and sample collection method. The laboratory provides a cooler with the sample bottles, preservatives and an instruction sheet unique to the type of sample. All sample bottles should be returned in the same cooler in which they were shipped.

4. Send the proper sample order form via e-mail to the Lab. Please allow up to two weeks for bottle delivery. Do not order too many bottles.

   There is a 4-6 week expiration date for the sample bottles that will be printed on the bottle and on the cooler. Please check the expiration date prior to sampling and do not use expired bottles.

5. If you have expired bottles, ship them back to the lab as soon as possible. Keeping expired bottles around may cause the lab to deny any new bottle orders until the old ones are back in their possession.

6. Everything in the cooler must stay together at all times. If a trip blank is included with the sample kit, it must stay with the bottles and be returned with the cooler. Samples from different sites may be shipped together using one trip blank. Make sure the sample bottles and trip blank are always together and clearly labeled.

7. Unless otherwise specified in the sample instructions or requested by the program office, wells must be purged for 5-10 minutes. If the sample port or hose bib is located after the tank and the tank is greater than 50 gallons, then purge at least one minute for every 10 gallons that the tank holds. Purging is required to ensure that fresh water is collected. Fresh water will provide an accurate assessment of its chemical makeup.

8. Be aware that several analyses require 2-3 bottles to make up a single sample (see below).

9. Many analyses require addition of preservative at the time of sampling (usually acid). If that is the case, fill the sample container approximately 90% full, add the preservative, and then finish collecting the sample.

10. At the time of collection, samples that require cooling MUST BE IMMEDIATELY PLACED ON WET ICE. Seal bottles inside the zip lock plastic bags provided to preserve the labels. After the initial cooling, samples must remain at 4°C (39°F). Store samples and produce your ice in clean refrigerator-freezers or ice makers.

11. Samples that require cooling may be stored in a refrigerator overnight at or below 4° C if being held until the next shipping day. Do not place samples in a refrigerator with any chemicals, volatile products, or foods. Sample bottles must not be kept in refrigerators for more than three days (Friday until Monday). For return shipment to the laboratory, re-pack the sampling kit with commercial freeze packs. To ensure that the preservation temperature of 4°C is maintained during shipment, use the same number/size of freeze packs initially provided by the laboratory. Samples received by the lab at between 6° and 8° C will be qualified. Those received over 8° C will be rejected.

12. Fill any empty cooler space in the cooler with packing paper to prevent breakage. Enclose the Chain of Custody Form and Environmental Chemistry Analysis Request Forms for each sample in a sealed plastic bag. If wet ice is used (only when delivering directly to the lab or if otherwise instructed), bottles should be placed in sealed plastic bags and suspended in the ice, and the cooler should be thoroughly sealed to prevent spillage during shipping to the lab. The contract shipper may reject shipments from a CHD if there is spillage. Samples must be shipped to the Jacksonville Lab via overnight delivery to ensure that the samples arrive at the lab properly cooled.

13. If a preservation bottle is shipped with the samples, the unused portion and bottle must be returned to the lab in the same secondary container it came in.

14. Samples must be received at the lab by noon on Friday. Usually this means that the samples should be shipped by Thursday afternoon. Samples should not be shipped on Fridays as the laboratory does not receive samples on the weekends. Samples collected on Friday must be refrigerated over the weekend and shipped overnight to the lab on Monday. You must ship samples to the lab so that the laboratory has time to fully analyze within the appropriate holding time.

15. Each label will have a pre-assigned sample number printed on it by the lab. In addition, make certain that each sample bottle from a single collection site has a FLUWID, date, and time (in 24-hour format).

16. Always use the Florida Unique Well ID (FLUWID) for potable wells. The Chain of Custody Form and all Environmental Chemistry Analysis Request Forms must be filled out completely. Make a copy of these forms for your records.

17. Guard against cross-contamination of water samples during sampling or transit**.** Also be cautious about not contaminating your samples through your hands and clothing.

18. If a result is greater than the MCL/HAL, the Jacksonville lab and/or the program office will contact you by e-mail and/or phone to let you know. If, for any reason, you are not notified and you observe an MCL or HAL violation on results when you receive them, please contact program office staff immediately.

Volatile Organic Compound (VOC) Samples

Volatile Organic Compounds (VOCs or Purgeables) are collected more often than any other parameter in the Well Surveillance Program. This section is specific to collecting VOC samples. VOCs can easily move out of a water sample into the air, or vice versa. Please review the DEP's Standard Operating Procedures in Appendix D (FS 2300 Drinking Water Sampling) for collection of VOC samples. VOC samples should be taken in accordance with the procedures above with the following additions:

Sample containers

1. Analysis of VOCs requires a glass sample vial, sealed with a Teflon-coated septum.
2. Triplicate samples must be collected. The lab can run the analysis with two bottles if one breaks. Samples will be rejected if two bottles are broken.
3. Visually inspect the glass vials to assure that there are no glass, lid, or septum defects (e.g. rim must have no nicks or visible depressions, septum must not be deformed, etc.). If defects are present and/or the sample container or septum does not appear to be clean, the vial must be discarded.
4. Be careful not to over-fill the bottle as this could flush out a powder preservative already in the bottle.

Preservation

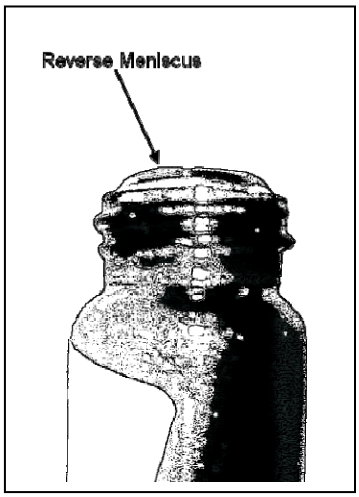
Samples are preserved with ascorbic acid to remove chlorine and hydrochloric acid to kill bacteria. All samples are treated as if they have been chlorinated. The ascorbic acid is a fine powder added directly to the bottles. The hydrochloric acid is added in the field. Samples must be placed on wet ice immediately after sample collection. Samples must be shipped within 72 hours so the analysis will be completed within fourteen days of collection.

Sample collection protocols (VOC samples)

1. All fuel, solvents, or exhaust sources that could cause VOC contamination should be situated away and downwind of the sampling site if possible.
   - Fuels or solvents must not be stored with, or transported in a vehicle with sample bottles.
   - Cautiously sample around Drycleaner facilities making sure no volatile fumes from the facility contacts the sample bottles or cooler.
2. Samples shall not be aerated during sample collection.
   - Caution must be exercised when filling a vial to avoid any turbulence that could promote aeration.

Carefully pour the sample down the side of the vial to minimize turbulence. As a rule, it is best to gently pour the last few drops into the vial so that surface tension holds the water in a reverse meniscus (a bulge over the rim of the vial).

3. Fill the bottle about 90% full, and then add six drops of the acid preservative provided in a dropper bottle. Then finish adding sample until the bottle is completely filled with a positive meniscus.



4. Do not allow anything to touch the rim of the sample container or cap.
5. The sample must be collected so that there are no more than two pinhead sized air bubbles in the container after the screw cap and septum seal are applied.
   - The cap with the septum should be quickly applied (make sure Teflon side of septum is down). Some samples may overflow, but air space in the bottle must be eliminated.
   - Tip the vial gently two or three times to distribute the preservative.
   - Turn the bottle over and tap it to check for bubbles. If any are present, remove the cap, add a few more drops of sample, recap and test for bubbles. REPEAT ONLY ONCE.
6. All vials must be labeled with the FLUWID, the sample date, and the sample time. Make a note of any samples that appear highly contaminated or appear to effervesce.
6. Rubber band and place each group of three vials in a small zip lock plastic bag, and immediately place on wet ice.
7. Pack and ship as detailed above.

Nitrate Samples

1. Fill the sample bottle slowly from the tap and leave a small head space.
2. Place the sample immediately on wet ice.
3. The sample must be analyzed within 48 hours. Therefore, the sample must be shipped to the lab for analysis on the day of sampling. In other words, samplers cannot hold nitrate samples in a refrigerator over the weekend like they can with VOCs.
4. Pack and ship using chill packs.

Other Analytical Methods

The following section briefly describes other drinking water analyses to be conducted by the Well Surveillance Section for the Drinking Water Toxics Program. The name of the analysis is given, along with any synonyms, the type of bottle used, the preservative if needed and any special instructions. The laboratory will provide sample bottles, preservatives, and sampling instructions.

Semi-volatile organics (EPA method 525.2) – Extractable Solvents

- Bottle: 500 mL amber bottle (2 bottles required)
- Preservative: sodium sulfite (25 mg) in bottle; 7 mL 1:1 hydrochloric acid added in field
- Holding Time: 14 days (from collection to analysis)
- Shipped chilled using ice packs

Carbamates (EPA method 531.1)

- Bottle: 40 mL glass bottle
- Preservative: sodium thiosulfate in bottle; 1 ml monochloroacetic acid added in the field
- Holding Time: 28 days (from collection to analysis)
- Shipped chilled using ice packs

Fumigants – several volatile pesticides including EDB (EPA method 504.1)

- Bottle: 40 mL amber vials (3 bottles required)
- Preservative: solution of sodium thiosulfate (40 mg/mL)
- Holding Time: 14 days (from collection to analysis)
- Shipped chilled using ice packs

Herbicides (EPA method 515.1)

- Bottle: 500 mL amber bottle (2 bottles required)
- Preservative (Chlorinated): sodium thiosulfate (40 mg/mL)
- Holding Time: 14 days (from collection to analysis)
- Shipped chilled using ice packs

Metals – Primary and Secondary

- Bottle: 1 L plastic bottle
- Preservative: Nitric Acid
- Ice packs are not needed for shipment

Chlorinated Pesticides (EPA method 505)

- Bottle: 40 mL amber vials (3 bottles required)
- Preservative: solution of sodium thiosulfate (40 mg/mL)
- Holding Time: 14 days (7 days for heptachlor)
- Shipped chilled using ice packs

Odor

- Bottle: 250 mL glass bottle
- Preservative: none
- Shipped chilled using ice packs
- Must be analyzed within 12 hours – rush back to lab

Bromacil – (includes Bromacil and Diuron)

- Bottle: 250 ml glass bottle
- Preservative: none
- Shipped chilled using ice packs

Bacteriological Sample – BACT (limited to a Granulated Activated Carbon (GAC) filter or special request by Toxics)

- Plastic Bottle or Whirl-Pak – depends on laboratory

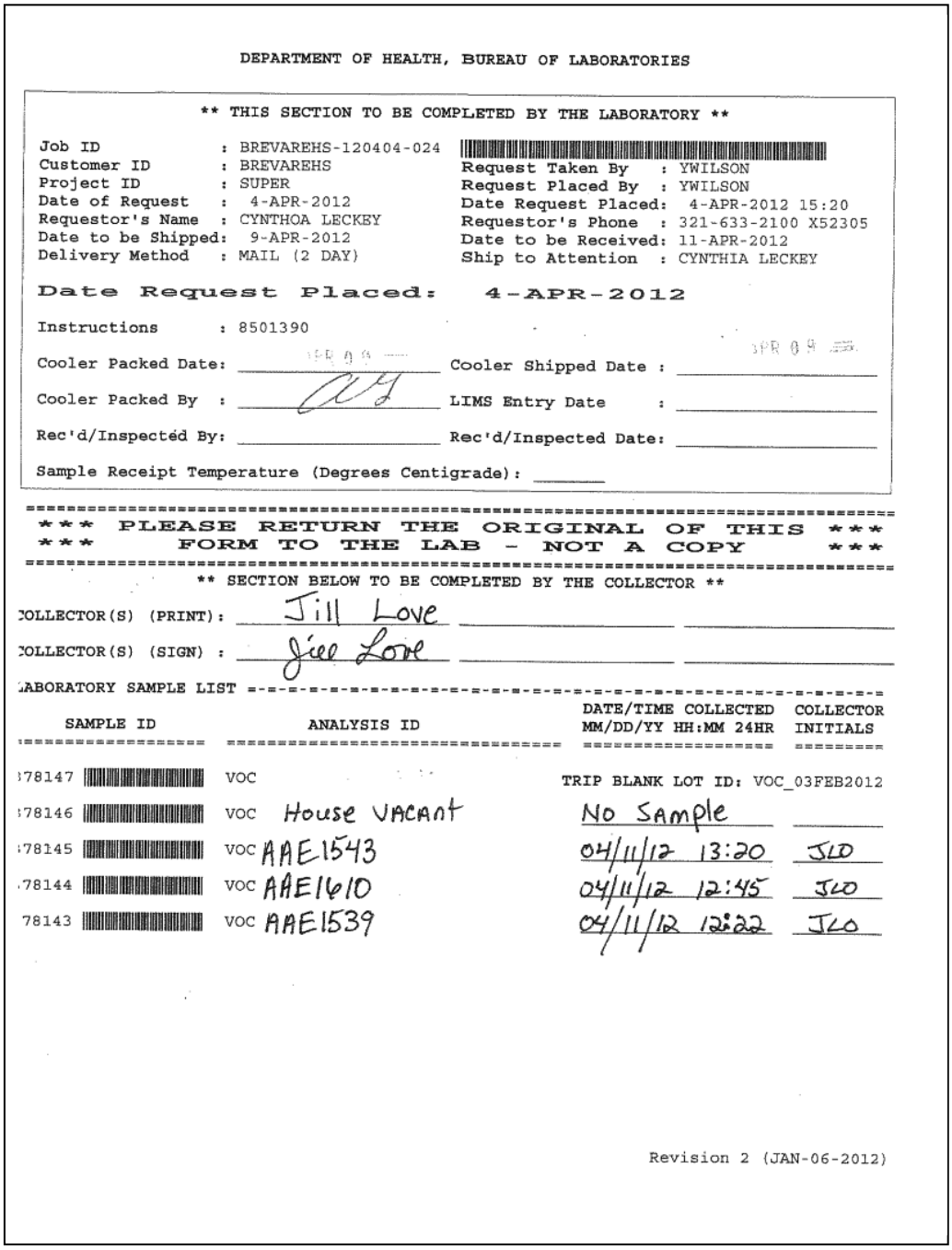
AFIT

- Suite of analytes specifically for wells with arsenic concentration greater than 40 ug/L. This is only performed once on a well before the installation of a point-of-entry filter. These results helps DEP to evaluate the chemical environment and to provide information that will be used to predict filter life expectancy and effectiveness.

CDV

- Suite of analytes specifically for the cattle dip vat program – arsenic and certain pesticides

Chain of Custody



DEPARTMENT OF HEALTH, BUREAU OF LABORATORIES

** THIS SECTION TO BE COMPLETED BY THE LABORATORY **

Job ID	: BREVAREHS-120404-024		
Customer ID	: BREVAREHS	Request Taken By	: YWILSON
Project ID	: SUPER	Request Placed By	: YWILSON
Date of Request	: 4-APR-2012	Date Request Placed:	4-APR-2012 15:20
Requestor's Name	: CYNTHOA LECKEY	Requestor's Phone	: 321-633-2100 X52305
Date to be Shipped:	9-APR-2012	Date to be Received:	11-APR-2012
Delivery Method	: MAIL (2 DAY)	Ship to Attention	: CYNTHIA LECKEY

Date Request Placed: 4-APR-2012

Instructions : 8501390

Cooler Packed Date: APR 09 Cooler Shipped Date : APR 09

Cooler Packed By : Cooler Shipped Date :

Rec'd/Inspected By: Rec'd/Inspected Date:

Sample Receipt Temperature (Degrees Centigrade):

*** PLEASE RETURN THE ORIGINAL OF THIS ***
*** FORM TO THE LAB - NOT A COPY ***

** SECTION BELOW TO BE COMPLETED BY THE COLLECTOR **

COLLECTOR(S) (PRINT): Jill Love

COLLECTOR(S) (SIGN) : Jill Love

LABORATORY SAMPLE LIST

SAMPLE ID	ANALYSIS ID	DATE/TIME COLLECTED MM/DD/YY HH:MM 24HR	COLLECTOR INITIALS
78147	VOC	TRIP BLANK LOT ID: VOC_03FEB2012	
78146	VOC House VACANT	No Sample	
78145	VOC AAE1543	04/11/12 13:20	JLO
78144	VOC AAE1610	04/11/12 12:45	JLO
78143	VOC AAE1539	04/11/12 12:22	JLO

Revision 2 (JAN-06-2012)

A Chain-of-Custody form will be provided with each sample kit. The sampler will need to assign the sample bottle used to the appropriate FLUWID. This is completed in the Analysis ID in the example above. Also, be sure to note the Date, Time Collected and other information as shown in the right hand columns from the example above. Please be sure handwriting is legible. Most data entry mistakes occur because a person's writing can't be interpreted correctly.

Environmental Chemistry Analysis Request Form

STATE OF FLORIDA
DEPARTMENT OF HEALTH
BUREAU OF LABORATORIES

FLORIDA DEPARTMENT OF HEALTH

1217 PEARL STREET
JACKSONVILLE, FLORIDA 32202
SC 866-1506 (904) 791-1506

ENVIRONMENTAL CHEMISTRY ANALYSIS REQUEST FORM

CUSTOMER INFORMATION

COUNTY/AGENCY: DEPARTMENT OF HEALTH
BUREAU OF WATER PROGRAMS
STREET: 4052 BALD CYPRESS WAY
CITY STATE ZIP: BIN #C22 TALLAHASSEE, FL 32399-1742
PHONE: (850) 245-4444 (IF AVAILABLE – PROVIDE AND INDICATE SUNCOM NUMBER)

PROJECT ID (Circle): (SUPER ACT) DSCP TOX:
COLLECTOR: Bryan Schroeder
SIGNATURE: Bryan Schroeder
RELINQUISH DATE: 12-16-08 (REQUIRED FIELD)

SAMPLE INFORMATION

DATE COLLECTED: MM 12 DD 16 YY 08 TIME COLLECTED: HH 10 MM 50 SAMPLE VIAL ID: AAA7829 (FLUWID – REQUIRED FIELD)
PURGE DURATION: 10 min or PURGE VOLUME: _____ gal
COMMENTS/DESCRIPTION: _____

SAMPLE TYPE (Check Only One):
☐ FIRST SAMPLE ☐ PRE-FILTER
☒ RESAMPLE ☐ MID-FILTER
☐ COMPLIANCE ☐ POST-FILTER
☐ COMPLAINT (Citizen or County Initiative)

TREATMENT CLASSIFICATION:
☐ C - CHLORINATED ☒ R - RAW (Pre-tank) ☐ G - GREEN SAND FILTER
☐ W - WATER SOFTENER ☐ P - RAW (Post-tank) ☐ O - REVERSE OSMOSIS
☐ A - AERATED ☐ N - ACTIVATED CARBON ☐ I - ION EXCHANGE

DRINKING WATER SOURCE / WELL TYPE (Check Only One):
☐ 40 - COMMUNITY WATER SYSTEM (>100,000 gallons/day)
☒ 41 - NON-COMMUNITY WATER SYSTEM
☐ 42 - LIMITED USE PUBLIC WATER SYSTEM (64E-8)
☐ 43 - PRIVATE WELL
☐ 45 - NON-TRANSIENT/NON-COMMUNITY WATER SYSTEM
☐ 46 - COMMUNITY WATER SYSTEM (<100,000 gallons/day)
☐ 47 - MULTI-FAMILY WELL (3-4 Living Units)
☐ 50 - IRRIGATION WELL
☐ 60 - PERMEATION
☐ 70 - NON-WELL (2nd Discharge From Same Well/Other Water Source)

ANALYSES REQUESTED ☒ VOCs ☐ Semi-VOCs ☐ Primary Metals ☐ Secondary Metals ☐ NO2/NO3 ☐ Fumigants ☐ Pesticides
☐ Other Parameters (List): _____

WELL SITE INFORMATION

SAMPLE/SYSTEM NAME: OUTS TOO
STREET: 7969 Hwy 98
CITY: Newport STATE: FL ZIP: 32327 COUNTY: Wakulla (REQUIRED FIELD)
FACILITY NUMBER: 894340 (REQUIRED FIELD) REQUEST ID NUMBER: 46869 (REQUIRED FIELD WHEN APPLICABLE)

CASING MATERIAL
☐ 1 - PVC
☒ 2 - GALVANIZED
☐ 3 - CAST IRON
☐ 4 - BLACK STEEL
☐ 5 - OTHER _____

TOTAL WELL DEPTH: _____ ft
WELL DIAMETER: 4 in
CASING LENGTH: _____ ft

FLORIDA UNIQUE WELL ID
PLACE TAG HERE
If no tag is available, write number below:
AAA7829

CONTACT INFORMATION

NAME: (Last) White (First) Dorthy ☒ OWNER ☐ RESIDENT ☐ BOTH (Owner/Resident)
STREET: 7968 Hwy 98 CITY: New Port
STATE: FL ZIP: 32327 PHONE 1: (850) 925-6448 PHONE 2: ( )

LABORATORY USE ONLY

JOB ID: HSEE-081016-026
SAMPLE ID NUMERIC: 320223
SAMPLE ID TEXT: 081016-110

DATE & TIME RECEIVED:
SAMPLE RECEIPT TEMPERATURE (C): _____
LABORATORY REMARKS: _____

The Environmental Chemistry Analysis Request Form is the most important form to fill out. Please print clearly and complete all lines.

Prior to shipping, please compare the sample bottles, Chain of Custody, and Request forms to verify that the correct FLUWID is associated with each sample ID.

County/Agency: The county or agency that collected the sample.

Project ID: Circle the appropriate project. The program codes are **SUPER ACT, DSCP, WC and TOX** for the SUPER Act, Drycleaner Solvent Cleanup (DSCP)**, Waste Cleanup**and Toxics programs. Because Toxics has several tasks, fill in the box after TOX with one of the following: VOC, EDB-new, EDB-invest, Nitrate, CDV, Req., or HSET.

Address: County Health Department mailing address.

Collector: Printed/typed name of the field sample collector.

City, State, Zip: The address of the County Health Department, City, State, and Zip Code. Using an accurate CHD stamp or mailing label is permissible.

Signature: Signature of the field sample collector.

Phone: Field sample collector's work phone number including area code and extension.

Relinquish Date: The date the sample is sent to the Laboratory (mm/dd/yy). This is a required field.

SAMPLE INFORMATION:

Date Collected: Provide the Month, Day and Year (mm/dd/yy) the sample was collected.

Time Collected: Provide the Hour (HH) and Minute (MM) (using a 24-hour clock).

Sample Vial ID: This should be the FLUWID number you print on the bottle label. This is a required field.

Purge Duration/ Purge volume: Provide the number of minutes the well water was purged before the initial sample container was filled. This should be a minimum of 5 minutes. If the faucet is located after the tank and the tank is greater than 50 gal, flush the tank at least one time and record the

volume. Always check the raw (pre-tank) or raw (post-tank) box under treatment classification.

Comments/Description: This is the name associated with the location (i.e. Al's Shell Station) and can also include a description of unique conditions.

Sample Type: Only check *one* for each sample. **NOTE:** If sampling a filter, select pre-, mid-, or post-filter. Do not use "First Sample" or "Resample" for filter sample requests.

Definitions

First Sample	The first time a sample has been collected under this program.
Resample	A revisit to a well. The revisit may be due to improper initial collection, assessment of contamination concentration changes over time, etc.
Compliance	Sample collected that will be used for regulatory compliance.
Complaint	Samples collected because of a citizen's complaint or at the CHD's initiative.
Pre-filter	These samples are collected before water flows into the filter device. They are samples coming directly from the well and are collected last (to avoid the possibility of cross contamination).
Mid-filter	These samples are collected between the first and second GAC canisters and are collected second. Most Ion Exchange and Reverse Osmosis systems do not have mid-points so no mid-filter will be collected.
Post-filter	These samples are collected after the GAC filter treatment system and Ultraviolet light unit, or after all other treatments and are collected first.

Treatment Classification: Only check *one.* The type of water treatment, if any, should be identified with a check in the appropriate box:

C	Chlorinated*	**N**	Activated Carbon
W	Water Softener	**G**	Green Sand Filter
A	Aerated	**O**	Reverse Osmosis
R	Raw (Pre-tank)	**I**	Ion Exchange
P	Raw (Post-tank)		

NOTE: ***Permeation samples must have the chlorinated box checked.***

Drinking Water Source/ Well Type: Check the appropriate box to identify the well type as defined in Chapter 62-550.200, F.A.C. and Chapter 64E-8.001, F.A.C.

40 Community Water System (> 150,000 gallons/day)

41 Non-Community Public Water System
42 Limited Use Public Water System (64E-8)
43 Private Water Well
45 Non-Transient/Non-Community Water System
46 Community Water System (< 150,000 gallons/day)
47 Multi-Family Well (3-4 living units)
50 Irrigation Well
51 Irrigation Well (where DEP has requested a sample)
60 Permeation
70 Non Well (2nd discharge from same well/other water source - describe)

Note: Codes 50, 60 and 70 are not reimbursable unless prior approval is obtained from the program office.

ANALYSES REQUESTED: The laboratory can provide the following sample kits:

VOCs	Semi- VOCs	Primary Metals
Secondary Metals	NO2/NO3	Fumigants
Pesticides		

Please provide the type of analyses you are requesting here

WELL SITE INFORMATION:

Address: The physical address of the well in US Postal Service format. Avoid punctuation.

City: The city the well is located.

Zip: The zip code the well is located.

County: The two digit code for the county where the well is sampled

Facility Number: If applicable, this is the associated facility or risk source seven digit DEP ID number. This number is required for EACH facility or risk source in order for CHDs to receive reimbursement under the SUPER Act, DSCP or Toxics programs (Example 9512345, DOH9123).

Florida Unique Well ID: Florida Unique Well ID (FLUWID). EVERY potable well sampled must have a FLUWID assigned to it. If the well has not previously had a FLUWID number attached to it, place one of the three plastic FLUWID bar code stickers in the box. Otherwise, write the FLUWID number in the appropriate location in the box.

Well Survey Request #: This ID number is used to track samples for requested DEP surveys and can be found on the well survey request form (if applicable).

Casing Material: What is the casing made of? Check the appropriate box:

1-PVC
2-Galvanized
3-Cast Iron
4-Black Steel
5-Other

Total Well Depth: If known, give the total well depth.

Well Diameter: Determine from casing (if possible) the outside diameter of the well in inches.

Casing Length: If known, give the total casing depth in feet.

CONTACT INFORMATION:

Name (Last, First): Use full names, be consistent in spelling and ALWAYS get permission from the resident/owner prior to sampling. Check appropriate box to identify person as either:

Owner
Resident
Both (Owner/Resident)

Address: This is for mailing purposes. Do not abbreviate street names and always use US Postal Service abbreviations for street suffixes like St. or Ave.

City: Mailing address city.

State: Mailing address state.

Zip: Provide five -digit zip codes.

Phone 1: Home phone including area code

.

Phone 2: Work phone including area code.

If a second contact is necessary, place the information in the Sample Information section in the blanks following "Comments/Description"

LABORATORY USE ONLY: DO NOT WRITE IN THE SHADED AREA

The pre- assigned 9-digit sample number, 5 digit lab tracking number, job number and bar code are located in this section.

Chapter 5 - Reading the Laboratory Report

This chapter provides a brief explanation of the Bureau of Laboratory Services sample analyses results report. A sample report is provided on the following page and briefly described. The results of the sample analyses are used to determine if there is a potential for adverse health effects in contamination. Each CHD field staff should be familiar with this report and be able to identify exceedances of MCLs and HALs and understand the list of qualifiers.

Understanding the Laboratory Report

At first review, sample results may seem intimidating, but with a few simple guidelines, they can easily be understood. Please refer to the list below and the following pages to understand the data elements on the Laboratory Report.

A - Job ID – Identifier of all samples submitted in the same cooler. It contains the submitting county name, the date the samples were logged into the laboratory in (mm/dd/yy) format, and a two digit sequential number.

B - Sample record number. This number should **not** be used for identifying the sample.

C - Sample ID. This is the number used to identify the sample (commonly called the "Sample Number"). It is made up of the login date (mm/dd/yy), a dash, and a 3-digit sequential number.

D – Demographic information of where the sample was collected, who collected it, and any related information on why it was collected.

E – Analytes – This is the list of chemicals that were tested for.

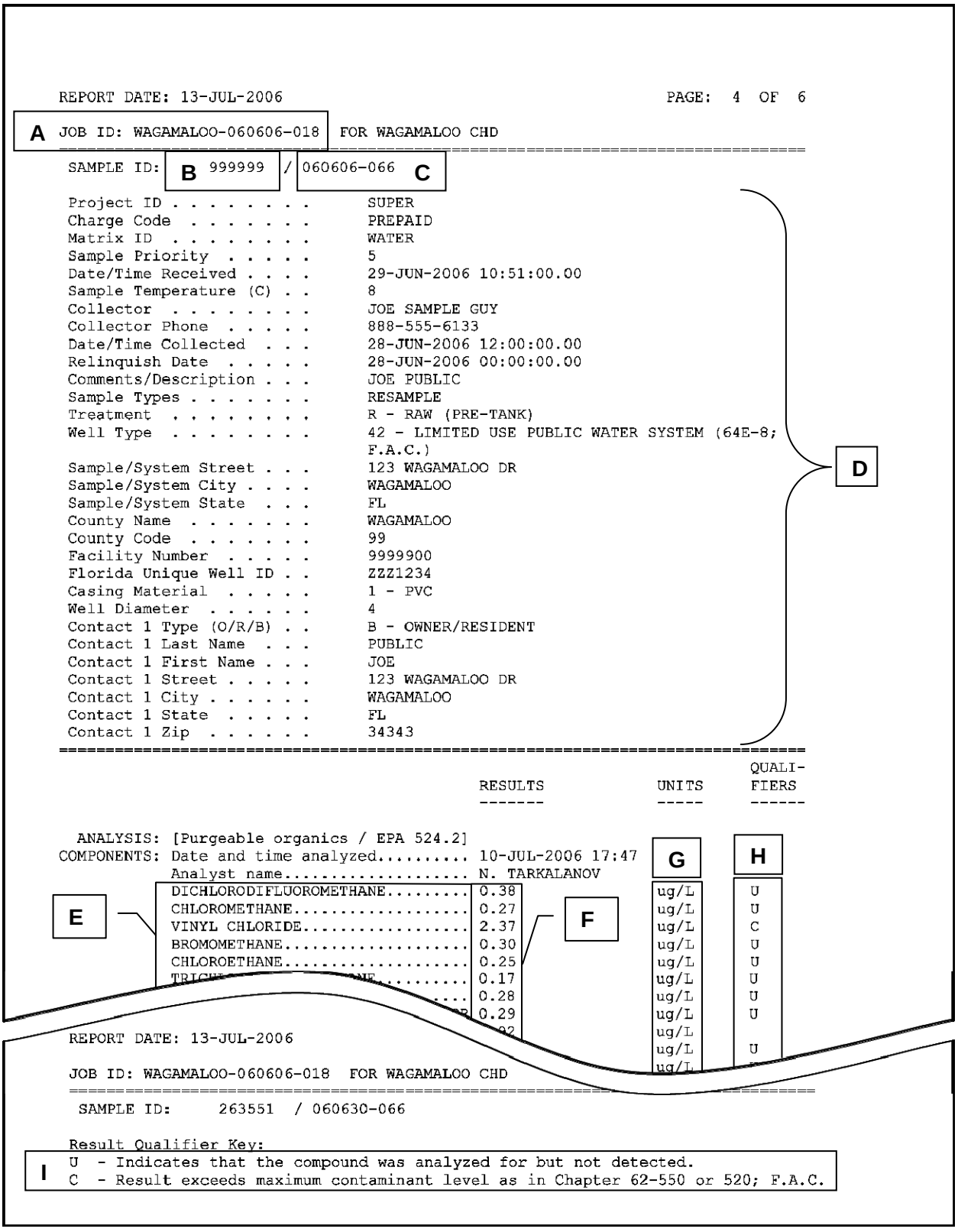
F – Results – This is where the analytical values of the tests are found. The key to understanding the results is to understand the Qualifiers.

G – Units – Units for Purgeable samples are in micrograms per liter (ug/L). This is the same as parts per billion (ppb). Milligrams per liter (mg/L), is the same as a part per million (ppm). For example, results of field nitrates will be reported in ppm.

H – Qualifiers – Qualifiers are used to describe the qualify of the data or the data usability.

I – Qualifier Key – A list of all qualifiers that were used in the report and their definitions. Some of the most common and/or important result qualifiers are listed later in this section. The full listing can be found in Appendix K.

SAMPLE LABORATORY REPORT



REPORT DATE: 13-JUL-2006 PAGE: 4 OF 6

A JOB ID: WAGAMALOO-060606-018 FOR WAGAMALOO CHD

SAMPLE ID: B 999999 / 060606-066 C

Project ID	SUPER
Charge Code	PREPAID
Matrix ID	WATER
Sample Priority	5
Date/Time Received	29-JUN-2006 10:51:00.00
Sample Temperature (C)	8
Collector	JOE SAMPLE GUY
Collector Phone	888-555-6133
Date/Time Collected	28-JUN-2006 12:00:00.00
Relinquish Date	28-JUN-2006 00:00:00.00
Comments/Description	JOE PUBLIC
Sample Types	RESAMPLE
Treatment	R - RAW (PRE-TANK)
Well Type	42 - LIMITED USE PUBLIC WATER SYSTEM (64E-8; F.A.C.)
Sample/System Street	123 WAGAMALOO DR
Sample/System City	WAGAMALOO
Sample/System State	FL
County Name	WAGAMALOO
County Code	99
Facility Number	9999900
Florida Unique Well ID	ZZZ1234
Casing Material	1 - PVC
Well Diameter	4
Contact 1 Type (O/R/B)	B - OWNER/RESIDENT
Contact 1 Last Name	PUBLIC
Contact 1 First Name	JOE
Contact 1 Street	123 WAGAMALOO DR
Contact 1 City	WAGAMALOO
Contact 1 State	FL
Contact 1 Zip	34343

D

	RESULTS	UNITS	QUALIFIERS
ANALYSIS: [Purgeable organics / EPA 524.2]			
COMPONENTS: Date and time analyzed	10-JUL-2006 17:47		
Analyst name	N. TARKALANOV		
DICHLORODIFLUOROMETHANE	0.38	ug/L	U
CHLOROMETHANE	0.27	ug/L	U
VINYL CHLORIDE	2.37	ug/L	C
BROMOMETHANE	0.30	ug/L	U
CHLOROETHANE	0.25	ug/L	U
TRICH[illegible]ANE	0.17	ug/L	U
[illegible]	0.28	ug/L	U
[illegible]R	0.29	ug/L	U
[illegible]	[illegible]02	ug/L	
[illegible]		ug/L	U
[illegible]		ug/L	

E F G H

REPORT DATE: 13-JUL-2006

JOB ID: WAGAMALOO-060606-018 FOR WAGAMALOO CHD

SAMPLE ID: 263551 / 060630-066

Result Qualifier Key:

I U - Indicates that the compound was analyzed for but not detected.
C - Result exceeds maximum contaminant level as in Chapter 62-550 or 520; F.A.C.

Definitions

MCL **Maximum Contaminant Level.** *The established safe concentration used by Public Water Systems. Typically based on an average adult drinking 2L per day for a 70-year life span.*

HAL **Health Advisory Level.** *The safe concentration based on an average adult drinking 2L of water per day for a 70-year life span. Not established in statute or code.*

PQL **Practical Quantification Limit.** *The minimum concentration where the reported result is considered accurate.*

Common Result Qualifiers

Some of the most common and/or important result qualifiers are listed below. The full listing can be found in Appendix K.

C Result exceeds Maximum contamination level (MCL)

E Analyte not detected; quality control out of range; result is the method detection limit.

H or HA Value exceeds DOH Health Advisory Level (HAL).

I Approximate result between method detection limit and practical quantification limit; supporting evidence for identity.
This means the lab is reasonably sure the chemical was in the water sample, but the concentration is so low they are not confident in the accuracy of the value.

J Approximate result; quality control out of range.
This means that the result is valid, but the value is an approximation.

M Method approved only as a screen for this analyte.

P No valid trip blank result for this analyte; result is suspect.

Q Method detection limit reflects sample dilution due to Matrix or interference effects

S Analyte not screened; result is the method detection limit.

U Analyte not detected; result is the method detection limit, if applicable.

X Analyte detected in both the sample and the trip blank.

Y Analysis from improperly preserved sample; result is suspect.

Guidance Concentrations

See appendix I.

Chapter 6 – Notifying Owners of Sample Analysis Results

In addition to obtaining the owner's or resident's permission prior to sampling a private well, it is required that the well owner and/or residential user be notified in writing of the laboratory results.

Regardless of whether the laboratory results indicate detectable compounds or not, the laboratory report (or a summary of the results and a notice allowing them to request the lab report) must be sent to the user/owner of the well. The CHD should include an explanation of how to read the laboratory report and some information on the potential toxicological effects of any detected contaminants exceeding MCL/HAL levels. Examples of Water Fact Sheets for select chemicals are provided in Appendix E and are kept updated at the intranet Sharepoint website. In addition to the Water Fact Sheets, the DOH keeps the latest Maximum Contamination Level (MCL) and Health Advisory Level (HAL) for all chemical contaminants at their web site.

An example of a notification letter is provided in Appendix F. The program office has developed a program that automatically generates these letters (available on the Sharepoint site) if the CHDs wish to use it. CHDs may also develop their own notification letters. These letters should be sent to the well owner/residents within two weeks of receipt of sample results. A copy should be kept in the CHD files.

CHDs have electronic access to these results on the laboratory network drive. The lab will email CHDs when new results are available. If you do not have access to the appropriate folder, please contact the lab or the program office.

MCL/HAL Violations

CHDs are expected to contact affected parties within 24 hours of their notification by Headquarters, if an MCL or HAL is detected and to send out hard copies of the sample results in a timely manner, along with an explanatory letter regarding the analysis results.

In addition, once you recognize there is contamination in a well at or above an MCL or HAL, it is important to take the following steps to ensure that safe drinking water is provided to the affected party.

1. Notify the residential user, and/or well owner, within 24 hours after you receive the sample results.

2. Once the residential owner or well owner is notified, document the date and time of the contact

3. Notify the DEP Water Supply and Restoration Program office of the contamination. Be ready to provide the following information:
   - Type and amount of contamination
   - Owner names, phone numbers, and addresses (including zip code)
   - FLUWID number for well and the 7-digit facility or risk source ID associated with it
   - Address and phone number of the site

- Nine digit sample ID

Please note that MCL and HAL values are considered safe by the department. The level becomes unsafe when the concentration rounds up to the next significant figure. The significant figures are determined in 62-550 Florida Administrative Code. Also keep in mind that action levels are based on lifetime exposures, and unless the concentration of contaminants are significantly above the MCL or HAL, there is no immediate need to replace the drinking water source. In most cases, the DEP Water Supply and Restoration Program office will have a filter system installed within a few weeks of discovery or connect the owner/resident to public water within a reasonable length of time. Please contact the program office if you believe that immediate corrective action is required.

When Public Water System (PWS) wells regulated by the DEP are sampled and found to be contaminated above the MCL or HAL, notify the System and the drinking water section at the local DEP district office or approved CHD within 24 hours. Document the date and time of this notification.

It is important to convey to affected parties and the public that drinking water above a guidance concentration may increase a person's chance of adverse health effects only if the contaminant is ingested over the course of a lifetime. Another instance when a positive finding is not significant in regards to health is when "I" or "T" qualifiers are listed on the laboratory report. These levels are generally considered too low to have any adverse affects on health. If you have any questions, please contact the program office toxicologist.

Chapter 7 - Sampling Filter Systems

The DEP determines the type of filter based on the contaminant present in the water. The most common filter types in the well surveillance program are granular activated carbon (GAC) and reverse osmosis filters. These are typically used to reduce VOC and arsenic levels respectively in contaminated drinking water wells. The illustration below shows a typical GAC filter setup for typical Petroleum or Solvent related contamination. The effectiveness of filters in removing a contaminant is related to (1) the type and concentration of contaminant, (2) the quantity of water usage, and (3) the type of filter being used. Large contaminant concentrations and high water use rates reduce the filter life. Water entering and leaving the filter should be tested by the CHD as requested by the DEP to ensure that the treatment system is working properly.

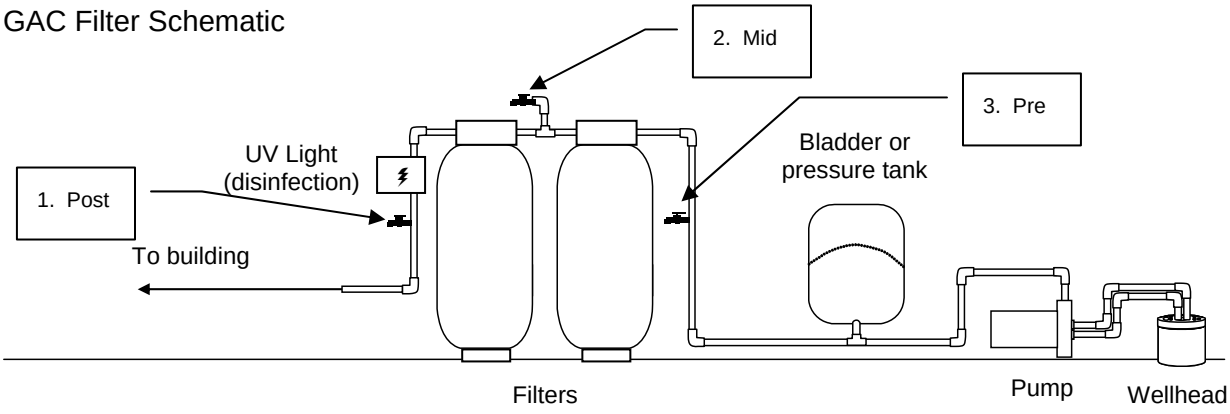
In addition, bacteria may grow on the surface of a carbon filter. Water should be disinfected after it passes through the filter to ensure its safety. Many types of disinfection systems are available. Ultraviolet (UV) radiation is one type of system shown to work effectively and efficiently to eliminate bacteria problems in water. Another system uses a chlorinator (more common).

The following guidelines should be used for sampling GAC filter systems.

1. Collect a bacteria sample (post-filter)
2. Record the water meter reading on the BACT form.
3. Check the UV light (if there is one) and attempt to ensure that it is working.
4. Collect samples in the following locations and in the following order:
   1) **Post-filter**
   2) **Mid-filter (if applicable)**
   3) **Pre-filter**

   *The post sample should be collected **first** so your hands will not contaminate the other samples.*

GAC Filter Schematic



Please note that DEP directs sampling of all filtered wells. This includes the SUPER Act, DSCP, Waste Cleanup, and Toxics filters.

Chapter 8 - Reimbursement

During the first week of every calendar quarter, each CHD will receive a report summarizing the reimbursable Well Surveillance activities completed in the previous quarter. Please review the reimbursement form you receive via e-mail for accuracy and report any problems. The program office will try to resolve any issues regarding the reimbursement form as quickly as possible. The returned reimbursement form must contain a certification signature, title, and date. Reimbursement will be provided for approved items in accordance with the contracted fee schedule (appendix J).

Chapter 9 – Well Surveillance Program Evaluation

All CHDs that perform the Well Surveillance program will be scheduled for a program Evaluation (this includes the SUPER Act, Drycleaner and Drinking Water Toxics Programs) on a three-year cycle to determine if they are following the policies and procedures outlined in this technical guide. This will be accomplished either by headquarters staff visiting the CHD location or through a Program Self Evaluation done by the CHD supervisor(s). The latter method is utilized when headquarters determines CHD's overall work quality is good. The evaluator(s) will review well survey, sample data and related information maintained in CHD files to adequately complete the evaluation (a minimum of one year's data to a maximum of three years data depending on the quantity of work accomplished). The administrative evaluation consists of three parts.

1. **Preliminary Activities** include evaluation of records kept in Tallahassee regarding timely completion of well survey requests, water sampling, work on Well Surveillance Areas, requested re-sampling, and other routine tasks.

2. **Office Activities** include a review of the recorded documents and file management procedures for eligible facilities, wells and well surveillance areas. It also includes activities relative to downloading GPS data, use of EHWater, Laserfiche, Oculus and other systems.

3. **Field Activities** include onsite evaluation of the accuracy and completeness of well surveys, well surveillance areas, the competency of field staff in collecting drinking water samples for laboratory analysis, and the use of Global Positioning System (GPS) equipment to obtain location coordinates of facilities (Risk Sources) and wells and send them to the program office.

These three activities are evaluated in terms of acceptable standards that apply across the state. Objectivity is a fundamental goal in developing this evaluation. These standards are evaluated numerically and deal with both present and past activities. Scores are calculated by percent of possible points as follows:

Rating	Percent
Excellent	90 to 100
Good	80 to 89.9
Fair	75 to 79.9
Requires Corrective Action Plan	60 to 74.9
Requires Corrective Action Plan & Follow up Review	<60

Preliminary Activities (38% of total score)

The following items will be evaluated by program office staff. Copies of the raw data may be sent to the CHD if there is a question or otherwise upon request.

1. **Well Survey Response Time.** *Percentage of surveys that were done within the amount of time assigned*.
2. **Assigned Sampling.** *Percentage of scheduled samples/re-samples completed by the due date.*

In addition, the average sample receipt temperature and number of substantiated complaints are recorded for information only.

Office Activities (24% of total score)

Each CHD will be evaluated on their record-keeping and office organization. The evaluation tool includes checks on the following:

1. **Office Filing System**. *This looks at the general storage of appropriate records, such as sample results, facility rescores, reimbursement files, and filter systems.*
2. **GPS (office).** *This determines whether the CHD's Well Surveillance employees can properly download, edit, export, and send GPS data to headquarters. It also looks at their abilities to locate information in Oculus and a GIS system.*
3. **Facility Files.** *Looks at 3-10 randomly selected facility files to determine if the CHD is properly filing and documenting information such as sample results; survey forms and maps; sampling permission issues; and sample notification.*

Field Activities (38% of total score)

CHDs will be evaluated on their field abilities. This will include ability to sample, locate and identify wells; familiarity with GPS equipment; and accuracy of information. The evaluation tool includes the following:

1. **Sampling Equipment.** *This looks at the ability of the CHD to order the correct number and types of sample bottles. Additionally, it checks to see if the CHD has access to refrigerator and ice to store samples.*
2. **Sampling Method.** *This checks the CHD personnel's ability to properly sample a well (to include gaining permission to sample a private well).*
3. **Analysis Request.** *This determines if the CHD is properly filling out the analysis request form.*
4. **GPS (field).** *This determines whether CHD personnel can properly use their GPS equipment.*
5. **Well Survey Accuracy.** *Field visits will be made to 3-10 sites to determine the survey accuracy by checking the number and location of wells reported on the last survey and the number located in the field.*
6. **Well Point Accuracy.** *Field visits will be made to 3-10 wells to determine if the FLUWID, address, casing diameter, and casing material were accurately recorded. The accuracy of the GPS point will also be evaluated.*

Note – If a specific activity does not apply to the CHD being evaluated, no evaluation points will be deducted for not doing it.

Note: Appendix A has a copy of the evaluation form.

APPENDIX A
Evaluation Process and Summary Report

An electronic copy of this evaluation report can be downloaded from our sharepoint site at:

http://def.sharepoint.doh.ad.state.fl.us/DEH/Water/Program%20Evaluations/Forms/AllItems.aspx

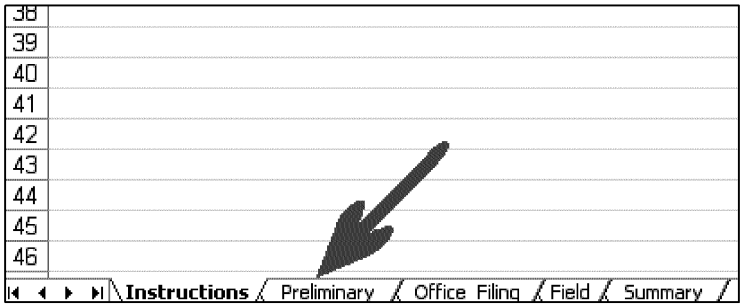
Well Surveillance Evaluation Tool

Version 08/22/2011 (2012-2014)

Instructions

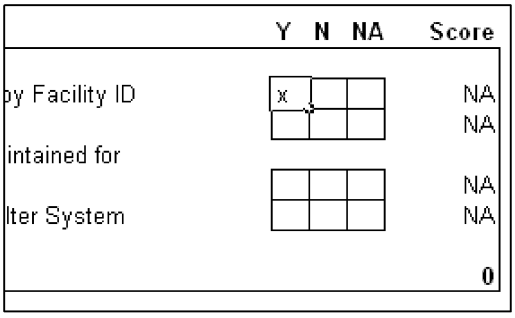
1. There are six tabs for this spreadsheet:
   Instructions (this one)
   Preliminary
   Office_Filing
   Field
   Summary
   Comments

Switch between tabs by clicking the name on the bottom of the window



2. Each tab contains categories that you are to be evaluated against. Please fill them out as completely as possible. If the specific part does not apply to your CHD, choose the "NA" option.

3. Choose options by clicking on the cell denoted by a box or line. For Yes/No/NA option cells, place an "x" in the box. (Not an "a." Nor a "b." An "x."). Your score and possible total will be calculated automatically.



4. The final tab contains the summary and final score. Please fill out your CHD name, date, and the evaluator(s).

5. Print.

Evaluation Summary

CHD: _____

Evaluation Date: _____

Evaluator(s): _____

_____

Evaluatee _____

	Actual Score	Possible Score
Preliminary Activities	**0**	**100**
Office Activities		
General Files	0	0
Facility Files	0	0
GPS Office	0	0
Training	0	0
Total	**0**	**0**
Field Activities		
Sampling	0	0
GPS Field	0	0
Well Survey Accuracy	0	0
Well Point Accuracy	0	0
Total	**0**	**0**

Weighted Score

Preliminary (38%)	0%
Office Activities (24%)	0%
Field Activities (38%)	0%
Total Points	0%
Final Score	**0.0%**

Requires Follow-up Review

Ratings:

Excellent	90-100%
Good	80-89.9%
Fair	75-79.9%
Requires Corrective Action Plan	60-74.9%
Requires Follow-up Review	<60%

NOTE: "**0**" is a calculated score depending on actual findings and actual number of sites and wells evaluated)

Preliminary Activities

Percentage of Requested Surveys Completed on time (60 points possible)

Max Score = 60		
>95% (60)		
90-94% (45)		
85-90% (30)		
80-84% (15)		
<80% (0)		
N/A		**NA**

Percentage of Scheduled Samples Completed on Time (40 points possible)

Max Score = 40		
>95% (40)		
90-94% (30)		
85-90% (20)		
80-84% (10)		
<80% (0)		
N/A		**NA**

Other

	Y	**N**	
Substantiated Well Survey Complaints?			
Average Sample Receipt Temp (°C)			**Info Only**

Scores for Preliminary Activities

(100 points possible = 100% score)

Max Possible	**100**
Actual	**0**
Percentage	**0%**

NOTE: NA = calculated score or is not applicable therefore not 'counted'

Office Activities

Office Files

(Up to 8 points possble)	Y	N	NA	Score
Max Score = 0				
System Sorting Method by Facility ID (2)				NA
Lab Results in File (2)				NA
Ability to retrieve FLUWID tags for streetside GPS'd wells (2)				NA
Separate File for Each Filter System (2)				NA
Total for Office Files				**0**

Facility Files (REVIEW 10 files, if available)

(Up to 25 pts possible per file)	Y	N	NA	Score
Facility ID				
Max Score = 0				
Final Well Survey Form (1)				**NA**
Date				
Final Site Map (1)				**NA**
Documented Sampling Permission (10)				**NA**
Sample Date				
Number Samples Collected				
Sample Results Filed (5)				**NA**
Documented Notification (8)				**NA**
Total for Facility				**0**

Facility ID				
Max Score = 0				
Final Well Survey Form (1)				**NA**
Date				
Final Site Map (1)				**NA**
Documented Sampling Permission (10)				**NA**
Sample Date				
Number Samples Collected				
Sample Results Filed (5)				**NA**
Documented Notification (8)				**NA**
Total for Facility				**0**

Facility ID				
Max Score = 0				
Final Well Survey Form (1)				**NA**
Date				
Final Site Map (1)				**NA**

Documented Sampling Permission (10)		NA
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		NA
Documented Notification (8)		NA
Total for Facility		0

Facility ID		
Max Score = 0		
Final Well Survey Form (1)		NA
Date		
Final Site Map (1)		NA
Documented Sampling Permission (10)		NA
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		NA
Documented Notification (8)		NA
Total for Facility		0

Facility ID		
Max Score = 0		
Final Well Survey Form (1)		NA
Date		
Final Site Map (1)		NA
Documented Sampling Permission (10)		NA
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		NA
Documented Notification (8)		NA
Total for Facility		0

Facility ID		
Max Score = 0		
Final Well Survey Form (1)		NA
Date		
Final Site Map (1)		NA
Documented Sampling Permission (10)		NA
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		NA
Documented Notification (8)		NA
Total for Facility		0

Facility ID		

Max Score = 0		
Final Well Survey Form (1)		**NA**
Date		
Final Site Map (1)		**NA**
Documented Sampling Permission (10)		**NA**
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		**NA**
Documented Notification (8)		**NA**
Total for Facility		**0**

Facility ID		
Max Score = 0		
Final Well Survey Form (1)		**NA**
Date		
Final Site Map (1)		**NA**
Documented Sampling Permission (10)		**NA**
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		**NA**
Documented Notification (8)		**NA**
Total for Facility		**0**

Facility ID		
Max Score = 0		
Final Well Survey Form (1)		**NA**
Date		
Final Site Map (1)		**NA**
Documented Sampling Permission (10)		**NA**
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		**NA**
Documented Notification (8)		**NA**
Total for Facility		**0**

Facility ID		
Max Score = 0		
Final Well Survey Form (1)		**NA**
Date		
Final Site Map (1)		**NA**
Documented Sampling Permission (10)		**NA**
Sample Date		
Number Samples Collected		
Sample Results Filed (5)		**NA**
Documented Notification (8)		**NA**

Total for Facility	**0**

GPS Office

(Up to 29 points possible)	**Y**	**N**	**NA**	**Score**
Max Score = 0				
Connect datalogger to computer (2)				**NA**
Locate, transfer, delete *.udf files (2)				**NA**
Edit *.udf files in SOLO Office (4)				**NA**
Export GPS data to text files (3)				**NA**
Export GPS data to kml format and view in Google Earth (5)				**NA**
Send files to HSEW email address (3)				**NA**
Review/Approve survey using Laserfiche (2)				**NA**
Search for Facility using Laserfiche (2)				**NA**
Locate facility data using Oculus (4)				**NA**
Display existing location data using EHWater or Desktop GIS (ArcMap, GoogleEarth) (4)				**NA**
Total for GPS Office				**0**

Training

(Up to 4 points possible)	**Y**	**N**	**NA**	**Score**
Max Score = 0				
CHD staff attended and passed Well Surveillance training course (4)				**NA**
Total for Training/Customer Satisfaction				**0**

Scores for Office Activities

Max Possible*	**0**
Actual	**0**
Percentage	**NA**

*Total maximum points is calculated based on the number of files reviewed and applicability of individual items.

NOTE: "**0**" is a calculated score depending on actual findings and actual number of sites and wells evaluated.
NOTE: NA = calculated score or is not applicable therefore not 'counted'

Field Activities

Sample Equipment

(Up to 13 points possible)	Y	N	NA	Score
Max Score = 0				
In good standing with laboratory bottle ordering system (5)				NA
Refrigerator available to store bottles (3)				NA
Technical Guide available (paper or electronic version) (2)				NA
Street atlas or county map (1)				NA
Up-to-date well listing available (2)				NA
Total for Sample Equipment				0

Sampling Method

(Up to 38 points possible)	Y	N	NA	Score
Max Score = 0				
Purge well according to instructions (4)				NA
Unscrew cap w/out touching septum (2)				NA
Bottle unrinsed (2)				NA
Bottle filled at angle (2)				NA
Produce proper meniscus (2)				NA
Check for bubbles (2)				NA
Label has date, time, and FLUWID (10)				NA
Vials in sealed plastic bags when iced (2)				NA
Chill bottles immediately on wet ice (4)				NA
Enclose field blank vials in cooler (4)				NA
Analysis request forms in plastic bag (4)				NA
Total for Sampling Method				0

Lab Submittal Information

(Up to 28 points possible)	Y	N	NA	Score
Max Score = 0				
Collector name, signature, relinquish date (2)				NA
Sample type, treatment class (2)				NA
Sample date and time (2)				NA
Water source type (40, 41, 42…) (2)				NA
Casing material, diameter, depth (2)				NA
Well name and address (2)				NA
FLUWID, Facility ID, Agency (8)				NA
Contact Information (2)				NA
Chain of Custody properly filled out (6)				NA
Total for Analysis Request Form				0

GPS Field

(Up to 15 points possible)	Y	N	NA	Score
Max Score = 0				
Turn on, make new *.udf file, check settings (3)				NA
Locate facility or well and				
Take DGPS point (3)				NA
Take 1 point offset (1)				NA
Navigate to existing point (5)				NA
Input data into feature tables (3)				NA
Total for GPS Field				0

Well Survey Accuracy (REVIEW 3 to 5 sites)

(Up to 60 points possible per site)	Y	N	NA	Score
Facility ID				
Max Score = 0				
Number of wells found in field				
Number of wells on survey				
Facility location accurate (10)				NA
Number of wells on survey = number of wells found in field (up to 10) (25)				NA
One well missing (10)				
Multiple wells missing (0)				
DEP score will not change based on difference in well numbers. If there were 0 wells found in the field check, this is NA (25)			x	NA
Total For Facility				0

Facility ID				
Max Score = 0				
Number of wells found in field				
Number of wells on survey				
Facility location accurate (10)				NA
Number of wells on survey = number of wells found in field (up to 10) (25)				NA
One well missing (10)				
Multiple wells missing (0)				
DEP score will not change based on difference in well numbers. If there were 0 wells found in the field check, this is NA (25)			x	NA

Total For Facility	**0**

Facility ID		
Max Score = 0		
Number of wells found in field		
Number of wells on survey		
Facility location accurate (10)		**NA**
Number of wells on survey = number of wells found in field (up to 10) (25)		**NA**
One well missing (10)		
Multiple wells missing (0)		
DEP score will not change based on difference in well numbers. If there were 0 wells found in the field check, this is NA (25)	x	**NA**
Total For Facility		**0**

Facility ID		
Max Score = 0		
Number of wells found in field		
Number of wells on survey		
Facility location accurate (10)		**NA**
Number of wells on survey = number of wells found in field (up to 10) (25)		**NA**
One well missing (10)		
Multiple wells missing (0)		
DEP score will not change based on difference in well numbers. If there were 0 wells found in the field check, this is NA (25)	x	**NA**
Total For Facility		**0**

Facility ID		
Max Score = 0		
Number of wells found in field		
Number of wells on survey		
Facility location accurate (10)		**NA**
Number of wells on survey = number of wells found in field (up to 10) (25)		**NA**
One well missing (10)		
Multiple wells missing (0)		

	Y	N	NA	Score
DEP score will not change based on difference in well numbers. If there were 0 wells found in the field check, this is NA (25)			x	**NA**
Total For Facility				**0**

Well Point Accuracy (REVIEW 5 to 10 wells)

(Up to 11 points possible per well)	**Y**	**N**	**NA**	**Score**
Well FLUWID				
Max Score = 0				
Well Address Correct (2)				**NA**
Well GPS point is accurate vs aerial photo (3)				**NA**
FLUWID correct (4)				**NA**
Diameter correct (1)				**NA**
Casing material correct (1)				**NA**
Total for Well				**0**

	Y	N	NA	Score
Well FLUWID				
Max Score = 0				
Well Address Correct (2)				**NA**
Well GPS point is accurate vs aerial photo (3)				**NA**
FLUWID correct (4)				**NA**
Diameter correct (1)				**NA**
Casing material correct (1)				**NA**
Total for Well				**0**

	Y	N	NA	Score
Well FLUWID				
Max Score = 0				
Well Address Correct (2)				**NA**
Well GPS point is accurate vs aerial photo (3)				**NA**
FLUWID correct (4)				**NA**
Diameter correct (1)				**NA**
Casing material correct (1)				**NA**
Total for Well				**0**

	Y	N	NA	Score
Well FLUWID				
Max Score = 0				
Well Address Correct (2)				**NA**
Well GPS point is accurate vs aerial photo (3)				**NA**
FLUWID correct (4)				**NA**
Diameter correct (1)				**NA**
Casing material correct (1)				**NA**
Total for Well				**0**

Well FLUWID	
Max Score = 0	
Well Address Correct (2)	**NA**
Well GPS point is accurate vs aerial photo (3)	**NA**
FLUWID correct (4)	**NA**
Diameter correct (1)	**NA**
Casing material correct (1)	**NA**
Total for Well	**0**

Well FLUWID	
Max Score = 0	
Well Address Correct (2)	**NA**
Well GPS point is accurate vs aerial photo (3)	**NA**
FLUWID correct (4)	**NA**
Diameter correct (1)	**NA**
Casing material correct (1)	**NA**
Total for Well	**0**

Well FLUWID	
Max Score = 0	
Well Address Correct (2)	**NA**
Well GPS point is accurate vs aerial photo (3)	**NA**
FLUWID correct (4)	**NA**
Diameter correct (1)	**NA**
Casing material correct (1)	**NA**
Total for Well	**0**

Well FLUWID	
Max Score = 0	
Well Address Correct (2)	**NA**
Well GPS point is accurate vs aerial photo (3)	**NA**
FLUWID correct (4)	**NA**
Diameter correct (1)	**NA**
Casing material correct (1)	**NA**
Total for Well	**0**

Well FLUWID	
Max Score = 0	
Well Address Correct (2)	**NA**
Well GPS point is accurate vs aerial photo (3)	**NA**
FLUWID correct (4)	**NA**
Diameter correct (1)	**NA**

Casing material correct (1)		**NA**
Total for Well		**0**

Well FLUWID		
Max Score = 0		
Well Address Correct (2)		**NA**
Well GPS point is accurate vs aerial photo (3)		**NA**
FLUWID correct (4)		**NA**
Diameter correct (1)		**NA**
Casing material correct (1)		**NA**
Total for Well		**0**

Scores for Field Activities

Max Possible*	**0**
Actual	**0**
Percentage	**NA**

*Total maximum points is calculated based on the number of sites/wells reviewed and applicability of individual items

NOTE: "**0**" is a calculated score depending on actual findings and actual number of sites and wells evaluated)

NOTE: **NA** = calculated score or is not applicable therefore not 'counted'

Comments

Required Corrections:

Recommendations:

General Comments:

APPENDIX B
Solo Office / Solo Field Manuals

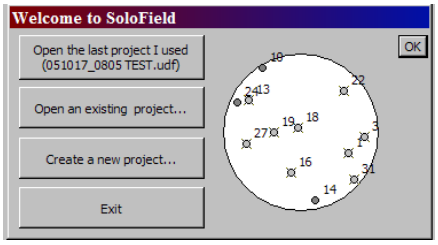
Florida Department of Health
Bureau of Environmental Health

SOLO FIELD VERSION 3.X

HSEW SOLO Field for Dummies
Quick Start Guide

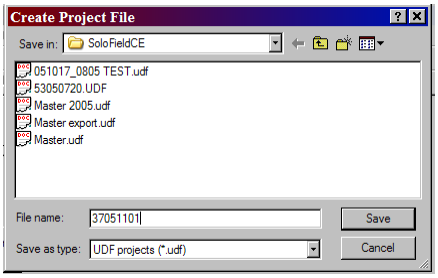
Prepared By: Gilbert Hoover
Date of Publication: 10/21/2004
Revised 11/01/2005
Revised 3/29/2012
Revised 3/22/2013

Creating a Project



When you first start SOLOFIELD CE, an opening prompt will ask if you want to open the last project, open an existing project, create a new project or exit the software. Also shown is the Satellites View screen, which is described later in the manual.

Tap on the **Create a new project** button to create a new project, Which will open the **Create Project File** dialog box.



Enter a name for the project in the **Name** field. The following naming convention has been established by HQ to facilitate uploading of data. For a sample collected in Alachua County on October 18th, 2004, the file name would be the county number (01), the two digit year (04), two digit month (10), and two digit day (18), (**01041018)** and tap the **OK** button. You can leave the other settings as they appear.

The default extension of .UDF is automatically added to the file name.

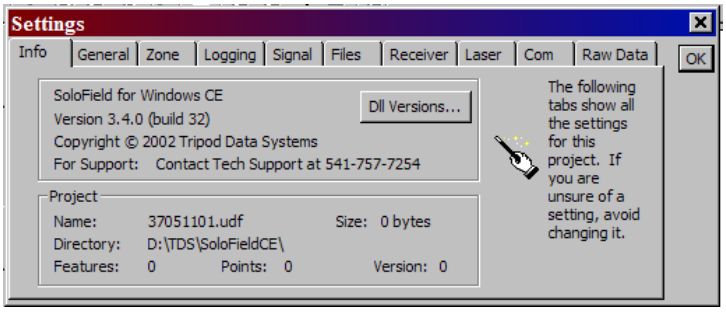
Settings

When you create a new project, the **Settings** dialog box will be displayed automatically. This is the dialog box where you configure the user interface and settings for the project. Clicking **File | Settings** can also access this dialog box.

There are several pages available from the **Settings** dialog box that is organized like index cards. Tapping on any tab along the top of this dialog box will open that page. For Pocket PC data collectors, all of the available tabs cannot be displayed at once. Use the left and right arrow buttons in the upper right corner of the dialog box to toggle the available tabs into view.

Each page in the Settings dialog box is described below.

Settings: Info



The **Info** page displays the version of the SOLO CE program and the information for the current project. Tap on the **DLL Versions** button to display the DLL component versions currently being used.

Project

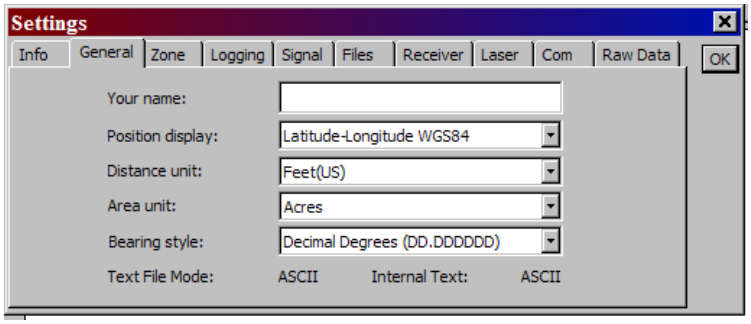
Name
This field displays the currently opened project.

Directory
This field displays where the project file is stored.

Features
This field shows the number of active and ended features in the project.

Points
This field shows the number of points that have been logged in the current project.

Settings: General



The **General** page is used to set the format for how your position is displayed and the units to use for distances and area calculations.

Your name
You can personalize the project by entering your name, or any text, in this optional field.

Position Display
Tap the ▼ button for this field and select Latitude-Longitude WGS84.

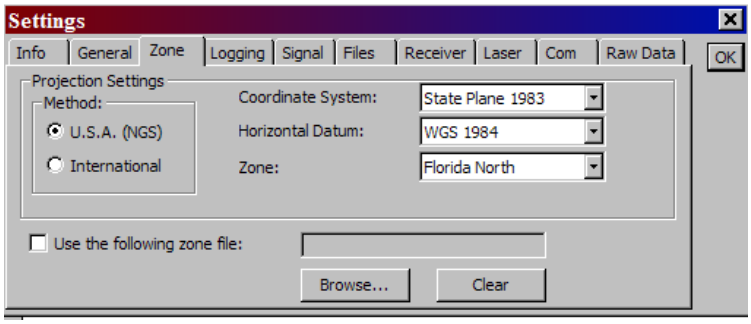
Distance unit
Tap the ▼ button from this field and select Feet (US) if it is not there

Area unit:
Leave as Acres

Bearing Style:

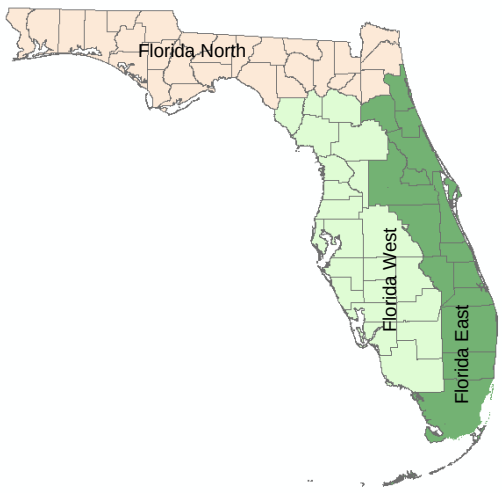
Select between Decimal Degrees (DD.DDDDDD) and Deg Min Sec (DD.MMSSSS) as the format to use when displaying bearings. We use Decimal Degrees.

Settings: Zone



Method
Select the projection method that is best for your project. In general, the **U.S.A (NGS)** option provides more accurate measurements, but is only valid when working within the North American boundaries. The **International** option is applicable worldwide.

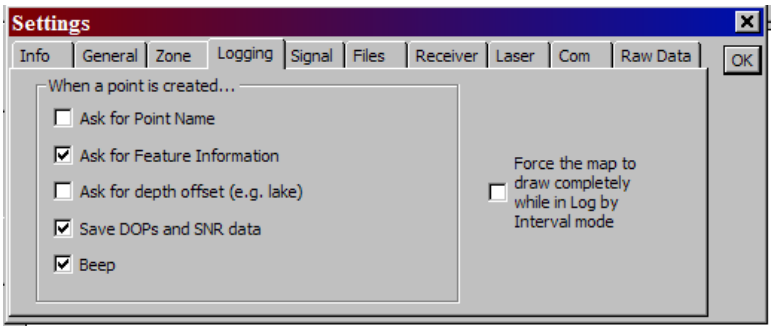
Coordinate System
Tap the ▼ button and select **State Plane 1983**.



Horizontal Datum
Tap the ▼ button and select **WGS 1984**.

Zone
Tap the ▼ button and select the zone where you will be working. Select **Florida North** for the panhandle (beige), **Florida East** for the eastern peninsula (dark green), or **Florida West** for the western peninsula (light green). Leave the "Use the following Zone file" box unchecked.

Settings: Logging



The **Logging** page has settings to customize the way that points are logged.

Use the following settings:
Ask for Point Name
Unchecked

Ask for Feature Information
Checked. When this is checked, you will be asked to enter feature and attribute data for each point that is stored.

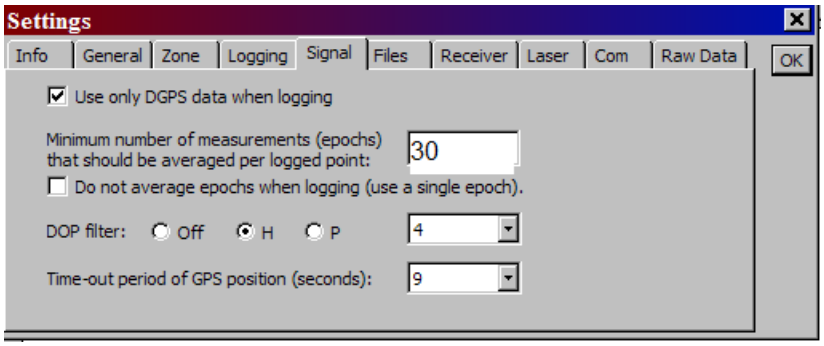
Ask for depth offset
Unchecked

Save DOPs and SNR data
Checked.

Beep
When this box is checked, a beep will sound each time a position is stored. **Optional**

Force full map in Log Interval mode
Unchecked.

Settings: Signal



Use only DGPS data when logging
Data from the GPS satellites is updated and transmitted approximately every second. Each transmission is called an *epoch*. When this box is checked, only the epochs that where a differential correction is applied are used for logging points. When unchecked, the differential correction is still applied, when available, but is not necessary for logging points. GPS accuracy without a differential correction can range from 1-10m. **Always check the DGPS box.**

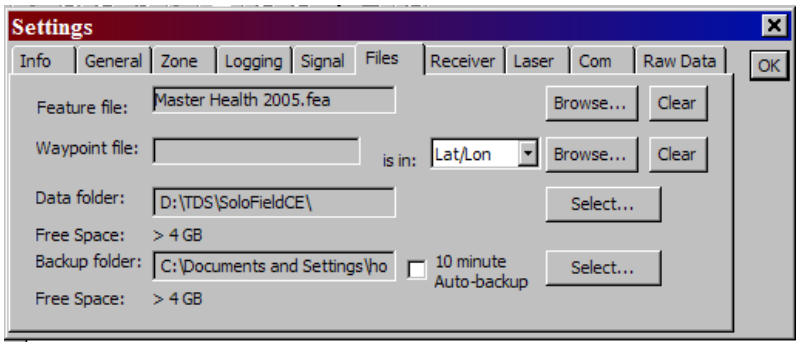
Min. number of measurements (epochs)…
Enter the minimum number of epochs (**30**) that must be collected and averaged for each position stored in this field. You will be required to occupy the location until the minimum number of epochs has been recorded.

DOP Filter
Dilution of Precision (DOP) Filter check the radio button for **"H"** for Horizontal Dilution. Higher HDOP values result in lower accuracy, where a value of 1 provides the highest accuracy. **A maximum acceptable value of 4 must be selected**. Epochs received that exceed this specified value are ignored.

Time-out Period of GPS position in seconds:

This is the amount of time (between 3 and 21 seconds) that must pass with no GPS signal before an error message is displayed. Select 9.

Settings: Files



The **Files** page is where you select the Feature file you want to use, as well as designating a backup folder and data folder.

Feature file

In this example the Feature File is "**Master Health 2005**". If the feature file is not shown, click on the **Browse** Button and select Feature File from the list if there is more than one.

Waypoint File
No information is required in this box. However, if you wish to use a Waypoint file, you can find your county at \\deh00sfp01\HSE_Public\HSEW\WellSurveillance_WaypointFiles . You will need to download the file to your PC and then transfer to your Data Logger. Click on Browse and you should see the file.

Data folder
This field displays the folder where data files are stored. The stored files include feature files, waypoint files, zone files and base map configuration files. Tap the **Select** button to select from the available folders.

Backup folder (Optional)
This field displays the folder where a backup file of the current project will be stored. Tap the **Select** button to select from the available folders.

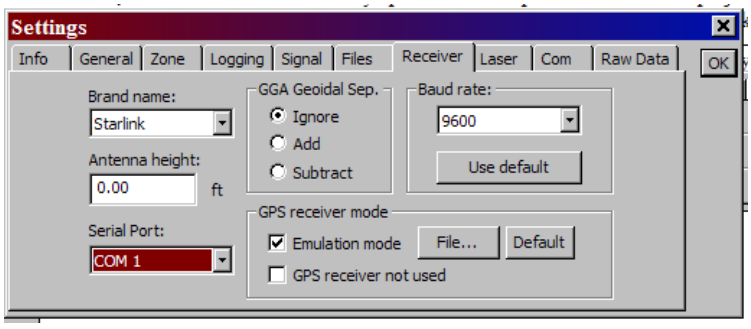
10 Minute Auto-backup
When this box is checked, SOLO CE will automatically update the backup file for the current project every 10 minutes. The backup file will be stored in the Backup folder designated. We recommend you check this box.

Note: If you are in Log by Interval mode and you have checked the Auto-backup box, you may notice a delay in the screen update during the backup process. All of the points will be recorded, and the Map View will be updated at the conclusion of the backup routine.

Settings: Receiver

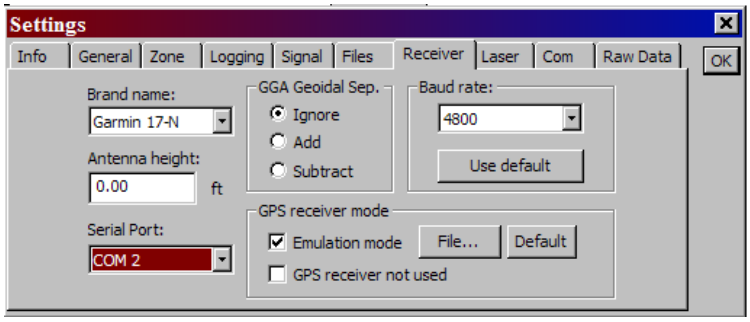
The **Receiver** page contains the settings that allow communication between the GPS receiver and the data collector. You can also configure SOLO CE to operate in emulation mode from this page.

Brand name
Tap the ▼ button in this field and select the brand of GPS receiver that you are using from the drop-down list. Select **Starlink** if you are using the Tripod or backpack with the Starlink Black box attached and for **Garmin** select Garmin 17-N. (see examples).



Recon or Ranger with Starlink

If you hook up your Recon or Ranger to the Starlink tripod or backpack. You will need to make these changes in the settings screen under the receiver tab. Under Brand Name choose Starlink, Serial Port choose Com 1, and Baud rate 9600. (see example 2. Under the Com tab uncheck the box "Disable User serial Port Input" make sure the Port = COM 1, Baud Rate = 9600, Parity = None, and the Stop Bits = 1.



Antenna height

Since elevations are calculated at the antenna, the distance that the antenna is held above the ground should be entered in this field. This distance is then used to calculate a more accurate elevation for the ground.

The table below shows what you should have for your type of Antenna.

Brand Name	Serial Port	Baud rate
Starlink	Com 1	9600
Garmin Ranger mounted	Com 2	4800
Garmin Pole mounted	Com 1	4800

GGA Geoidal Sep.

The data string that SOLO CE receives from the GPS receiver contains position information and an elevation correction that allows SOLO CE to convert between ellipsoid and orthometric elevations. We don't use this feature, so choose "Ignore".

Note: Do not confuse the Baud Rate setting in this dialog box with the Baud Rate setting used to communicate with your desktop computer. Most GPS receivers communicate at a Baud Rate of 4800-19200.

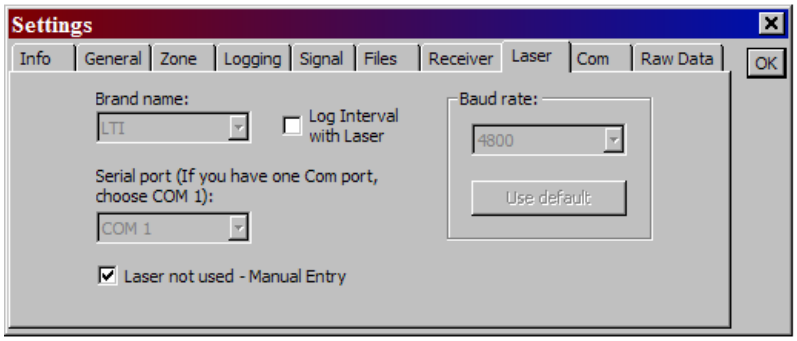
Emulation mode

SOLO CE normally needs to be connected to a GPS receiver to access many of the screens within the program. In order to facilitate training in an office environment without physically connecting to a GPS receiver, a special *emulation mode* is available.

When the **Emulation mode** box is checked, SOLO CE acts as if it were receiving a signal from a GPS receiver. When running in emulation mode, SOLO CE is essentially playing a "recording" of a receiver moving around in a large area. This "recording" is played through until it ends where it then starts playing from the beginning again.

If you have been using emulation mode, it is important to remember to disable (un-check) it again before using the unit out in the field since communication with the receiver does not take place while running in this special mode.

Settings: Laser

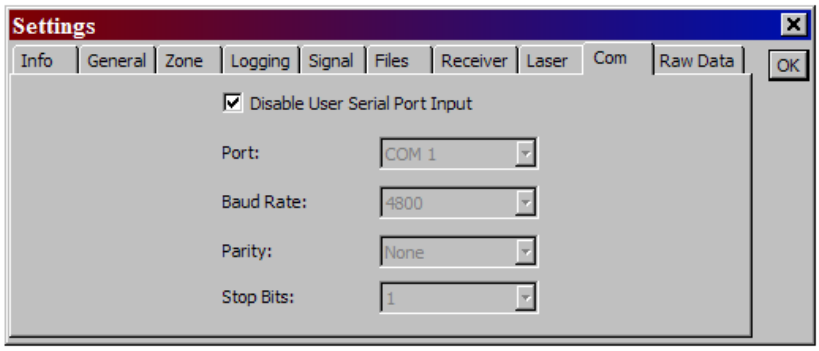


A laser rangefinder can be used with SOLO CE to acquire positions that will not be physically occupied. The **Laser** page is where you configure the settings for a laser rangefinder so SOLO CE can communicate directly with the rangefinder. All the settings from this page only apply when a laser rangefinder will be connected to the data collector by a communications cable. If distances from a laser rangefinder are manually keyed into the Data collector, the parameters below will have no effect.

Laser not used – Manual Entry should be Checked

Note this is the only box that should be checked. Disregard all other settings
When this box is checked, SOLO CE will not look for incoming data from a laser rangefinder. Offset information can be entered manually.

Settings: Com

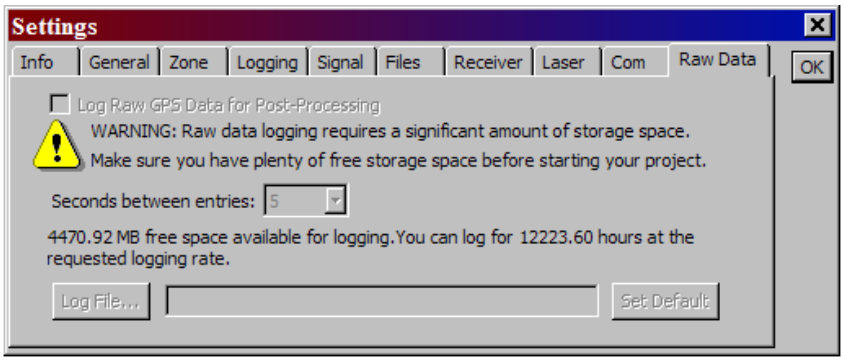


Solo Field will allow you to read data strings coming in through the COM port of your data collector to populate attribute fields. This page allows you to select and configure the port that you will be using for serial input.

Disable User Serial Input:

Check this box; you will not be using the serial input option.

Settings: Raw Data



There is nothing in this screen that needs to be checked or changed.

Once each page of the **Settings** dialog box is correctly filled in for your project, tap the **OK** button to close the dialog box and save the settings.

Logging Points

Logging Points with GPS

At this point you should either be running in emulation mode (see page 5), or you should be outside with the hardware connected to view the screens that are described below.

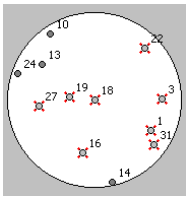
Checking Signal Quality

Once you are outside with all the hardware connected and a project opened, you should see the main SOLO CE screen, referred to as the Map View.

It can take a few minutes after connecting the hardware for the first time before the GPS and differential correction signals are available and usable. The signal quality varies depending on the location of the satellites in the sky, which is always changing and affects your accuracy.

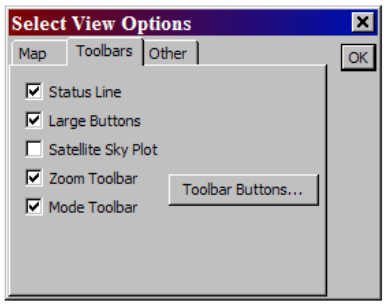
Before you start collecting data, it is a good idea to check the signal quality. The areas to watch that indicate the signal quality are the Satellites View and the Status Line. Each is explained below.

Satellites View



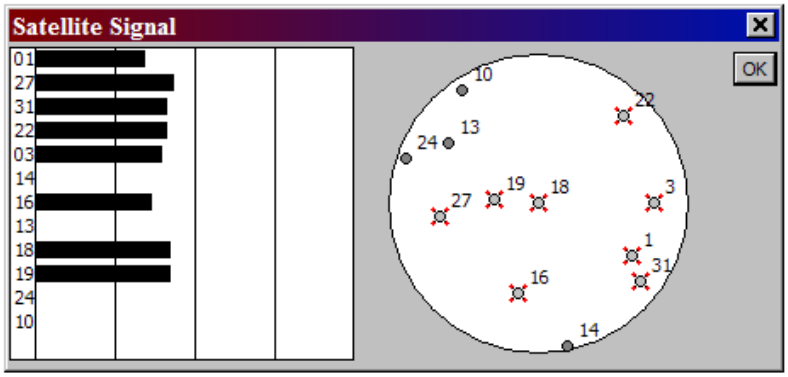
The Satellites View shows a graphical representation of where the GPS satellites are positioned in the sky. Your current position is at the center of the sky plot. The top of the sky plot is north. The highest accuracy is obtained when at least **four** satellites are used where one satellite is directly over-head and the other three are positioned near the horizon, equally spaced apart.

Satellites that are in view, but are not being used are shown as a **gray circle**. Satellite 14 in the picture here is an example of an unused satellite.



The Satellites View can be toggled on and off in the select **View** | **Display Options | Toolbars** dialog box. Turning the Satellites View off will increase the size of the Map View. Also, you can toggle on /off other features as shown to the left.

Strength and Sky Plot....



You may also display the **Satellite Signal** dialog box, a floating dialog box containing the Satellite Sky Plot and a chart of the satellite signal strength, by selecting **View | Satellite Strength and Sky Plot...**.

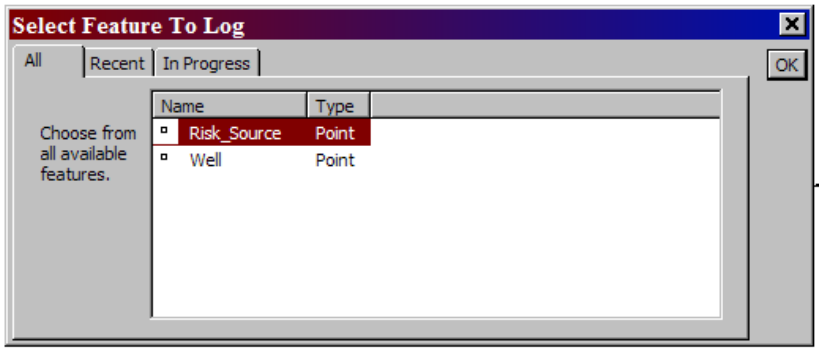
Status Line

GPS HDOP: 1.0 8 of 9 Satellites Lat: 44°30'32.05" N Long: 123°16'45.75" E

The Status Line provides information similar to that of the Satellites View. It shows if you are receiving a GPS signal or a DGPS signal. When DGPS is displayed, a differential correction is being applied.

The HDOP (Horizontal Dilution of Precision) value represents the positioning of the satellites. When at least four satellites are in ideal positions, as described earlier, this value should be less than 4.0. Higher HDOP values indicate less than ideal satellite locations and lower accuracy.

The number of visible and usable satellites is also displayed. In the Status Line shown above, 9 satellites are visible and 8 are being used.



Logging a Point

Once you are satisfied with the DGPS signal quality, you are ready to start logging points. Place the antenna over the point that you want to log and tap the **Log a Point** button.

The **Select Feature To Log** dialog box displays the available features in three different pages (DOH uses just two of them **All** and **Recent**.

All Page

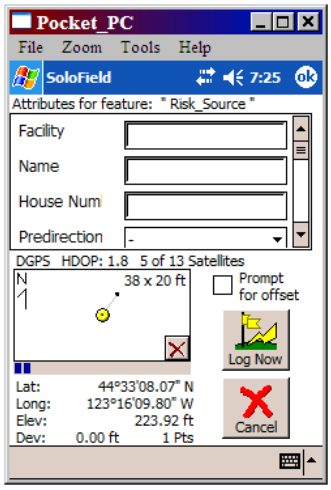
This page lists all the available features from the Feature file.

Recent Page

This Page allows you to select from the features that were recently used, where the most recently used feature is at the top of the list. If the feature you are trying to log is not shown, click on the **All** tab.

Finding features in the "Recent Page" can be easier than from the **All** tab when you have several different features available to choose from. Also, the attributes from the last logged feature of the same name will be carried over to the new feature if you select from the **Recent** page.

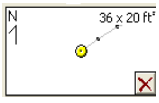
Once you have selected the feature that you wish to record, the **Log** dialog box will be displayed.



The Log Dialog Box

The **Log** dialog box is displayed after the feature is selected in the **Select Feature to Log** dialog box. Depending on the system setup, feature attributes are entered in the left side of this dialog box. If there are more attributes than can be displayed at one time, you may use the scroll bars to scroll through the entire list.

Once the **Log** dialog box is accessed, each valid epoch received is used to calculate an average position for the current location. The **Log** dialog box displays your current coordinates in the format that was chosen in the **Settings** dialog box and also displays a graphical representation of your current position. The following example is for a "Risk_Source" file.



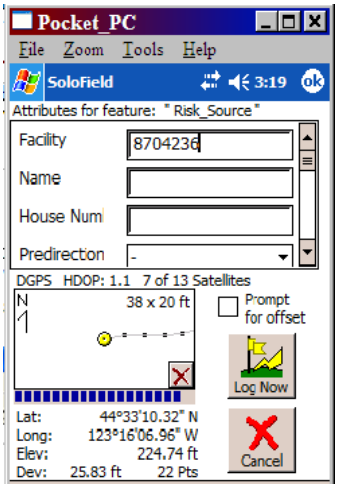
The circle in the center represents your position from the last epoch. The previous epochs are shown as smaller dots attached to the circle like a tail. These will move around as each new satellite epoch gives your position in a slightly different location.

The top of the box shows a north reference and the scale of the box, which is either 36 x 20 feet, or 11 x 6 meters. Immediately below this box is a graphical representation (blue bar) of the minimum number of epochs that have already been collected.

You cannot log a point until the minimum number of epochs (30) has been received, although SOLO CE will continue using any additional epochs to calculate an average position until you tap the **Log Now** button, even after the minimum number of epochs has been reached.

The minimum number of epochs is set from the **Signal** page of the **Settings** dialog box as discussed on page 4.

The **Deviation** field displays the average distance between the epochs and the calculated average position. In general, the longer you occupy a point, the smaller this distance will become. If the deviation rises above 3ft., or rises over time instead of falling, this is usually an indication of **multi-path error.**

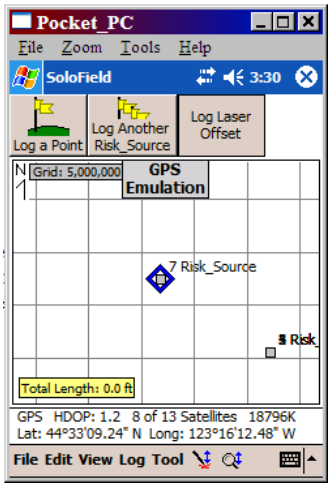


For this example, we will enter 7-digit ID 8704236 in the **Facility** field. This is the Facility ID #. Continue filling out the form until complete. Tap the **Log Now** button to store the point and return to the Map View where the new point will appear as a small square.

Log Another

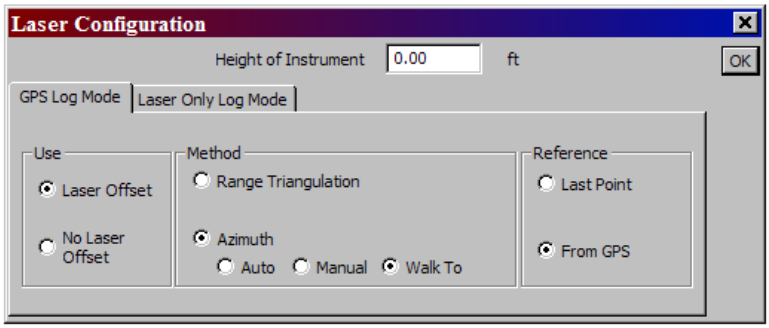
You will see your logged point with a Blue diamond around it. The Blue Diamond represents the most recent logged point.

Once a point has been logged, the **Log Another** button will appear directly beside or below the **Log a Point** button in the Map View, and the corresponding button will become active in the Tool Bar/Command Band. This button is useful when you are logging multiple points that have the same characteristics because it skips the feature selection process and goes directly to the **Log** dialog box.

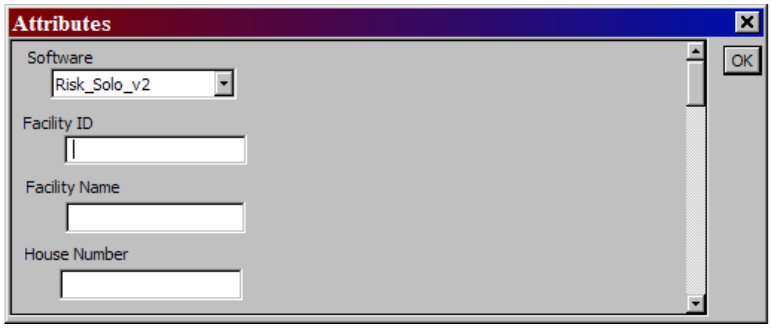


Laser One Point Offset-Azimuth

There are two methods of logging Laser Offsets. Method 1 is called **Azimuth** and Method 2 is called **Range Triangulation**. You have to decide which method to use. The program office teaches Method 1. Once decided, tap on **Tool | Laser Settings**. The laser Configuration dialog box appears. When you choose the method for performing a laser offset, SOLO CE will assume that you will be using the GPS receiver to determine your reference points. The Laser Configuration setting below is how the 1 point **(Azimuth)** Offset should look.

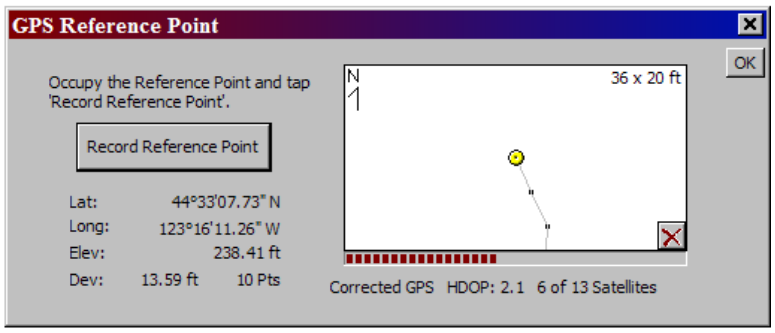


Make sure that you are in GPS log mode by tapping on the **Log GPS** button in the Tool Bar/Command Band, or by tapping **Log | Log With | GPS**.



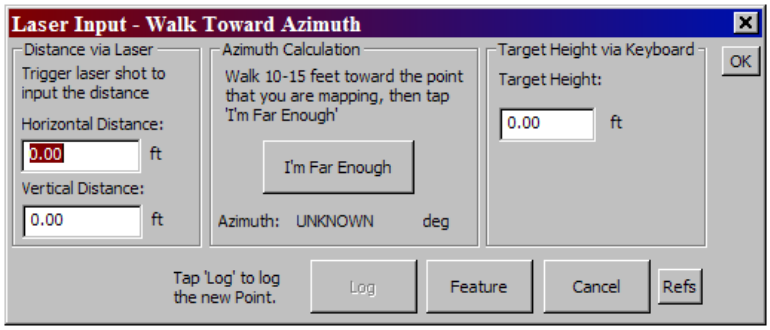
To do an offset, tap the **Log Laser Offset** button or select **Log | Log Offset / Interval | Log Laser Offset**.

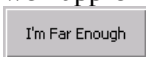
You will be prompted to select a feature and to complete the attribute table. When you click on the **OK** button in the **Attributes** dialog box, the **GPS Reference Point** dialog box will be displayed.

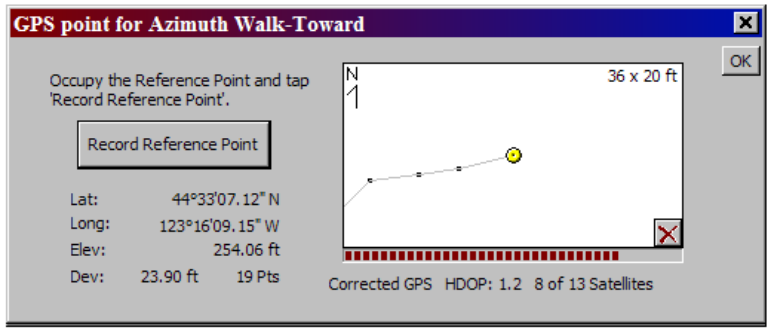


Your current position will be averaged. You will be required to occupy the position for the minimum number of epochs (30) established in the **Settings | Logging** dialog box.

Once you are satisfied with the position, tap the **Record Reference Point** button to store the position in memory.



The Laser Input – Walk toward Azimuth dialog box appears. Type in the distance from the well to the GPS unit in the Horizontal Distance Field. Pick up the instrument and walk directly towards the well approximately 10 to 15 feet. Then tap on the  button.



The GPS point for Azimuth Walk – Toward dialog box appears for the second time . After you receive the minimum number of epochs **(30)** until the bar at the bottom is completed. Tap on the **Record Reference Point**. Then you will be taken back to the dialog box below and tap on the **Log** button. You should see your logged point on the Map View screen.

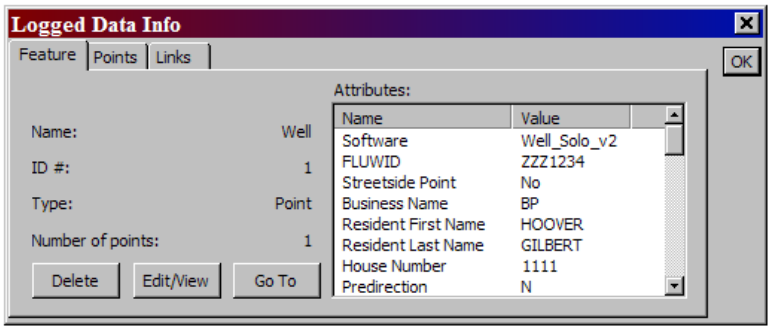
Editing Collected Data

This section of the manual will discuss the different ways in which you may edit data that has been collected using SOLO CE. SOLO CE allows you to edit both the point location and the attribute information for a feature. You can also edit the UDF file in Solo Office. Refer to the section on editing in the Solo office manual.

Editing Attributes

You can edit the attributes for a logged point by following the steps below.

Note: The Feature code that was used when the point was originally logged must be in the Feature file that is currently in use in order to edit the attributes of the point. All of your original menu selection items will be available.



Make sure that the stylus use is set to logged data by selecting **Edit | Stylus Use | Logged Data** or by tapping the **Stylus Logged Data** button on the Tool Bar/Command Band.

Select the point whose attributes you wish to edit by double tapping on it in the Map View or by selecting **Edit | Logged Features** and then double-tapping on it in the list in the **Logged Items** dialog box. The **Logged Data Info** dialog box will be displayed.

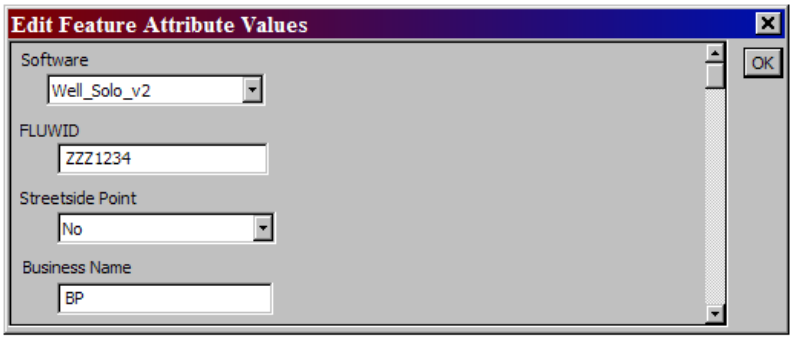
Tap on the **Feature** tab to make sure that the feature and attribute information is displayed.

Tap the **Edit/View** button 

to display the **Edit Feature Attribute Values** dialog box.

You may edit any of the attributes within the limits of the parameters established in the Feature file.

Tap the **OK** button to save the changes and return to the **Logged Data Info** dialog box.



Tap the **OK** button to return to the Map View.

You have just completed the Solo Field section. If you have any questions please contact the Program Office for assistance.

Florida Department of Health
Bureau of Environmental Health

SOLO OFFICE VERSION 3.X

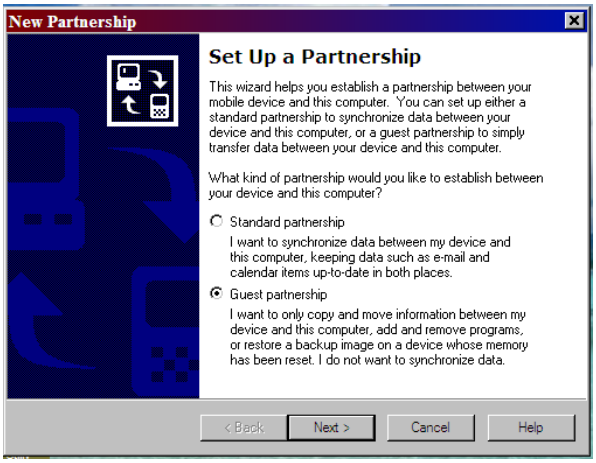
HSEW SOLO Office for Dummies
Quick Start Guide

Prepared By: Gilbert Hoover
Date of Publication: 10/21/2004
Revised 11/01/2005
Revised 4/2/2012
Revised 3/22/2013

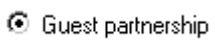
File Transfer & Exporting
Using Solo Office version 3.X

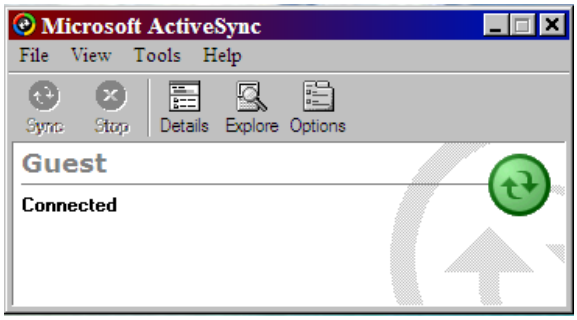
CONNECTING Using Windows XP and Windows 7
Windows XP Users

The following steps will prepare your field data, so that it can be sent to Tallahassee. This is a relatively easy procedure that can be done by following the directions below once Microsoft Active Sync version 3.7 and Solo Office version 3.2 have been successfully installed on your computer.



Connect the Data Logger) to the serial port on your computer using the DATA LOGGER computer data cable provided to you. If the Data Logger has or has not been previously connected you will get the **New Partnership** Dialog box.

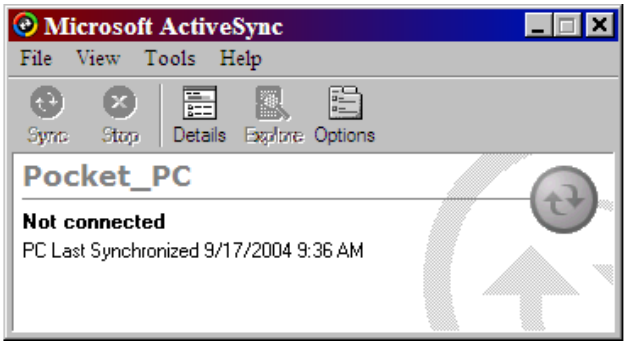
Click on  then  The Next screen that appears is the connected screen.

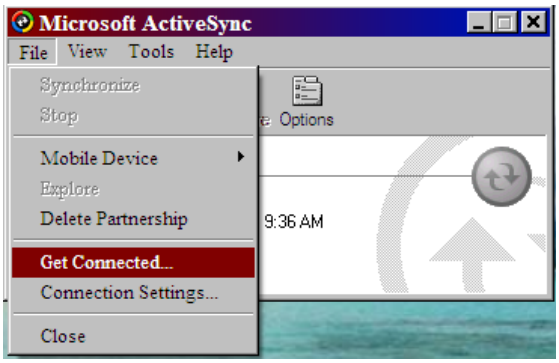


You can minimize this screen if desired.

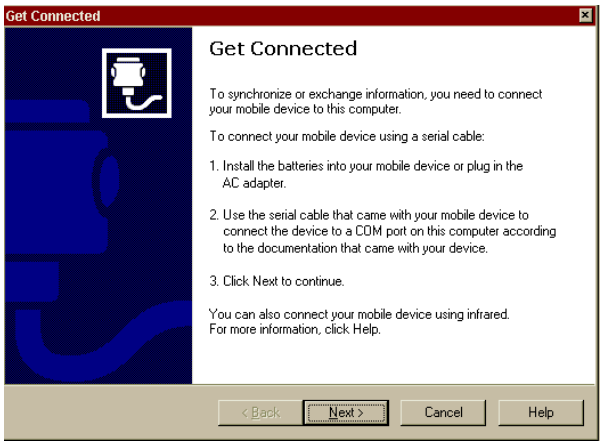
If the Setup partnership screen doesn't appear and the **Not connected** screen appears,

Click on File on the Menu bar in The Microsoft ActiveSync Dialog Box.

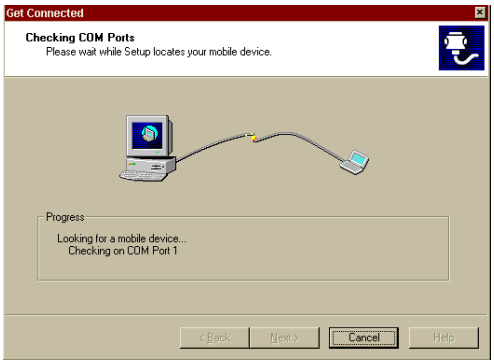




Then click on **“Get Connected…”**.

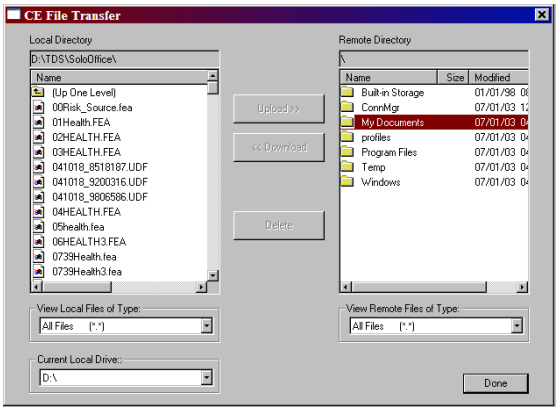


Then Click on 

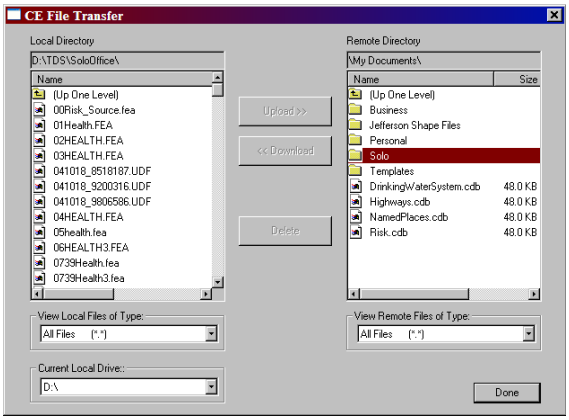


If you are still having problems connecting: (1) Turn on your DATA LOGGER, (2) Make sure that solo-field isn’t running, (3) In the upper left-hand corner of the screen, tap on “**Start**”, “**Active Sync**”, **“Tool** then **Options” Options** again. In the upper left hand corner, the little box should be checked **“Enable PC sync using this connection:”** then tap **OK.**

CE File TRANSFER XP Users only



Once the DATA LOGGER has made a connection to your computer then open Solo Office. From the **Prepare** menu select **File Transfer**. This will bring up the “**File Transfer** for SoloField CE” window. On the right side of the window is the remote directory of your data logger. Double click on **My Documents** then double click on **Solo** folder. Note: If you are using a Ranger you will have to click on **Disk** first.



Project files have an UDF extension. Single click on the UDF file you wish to transfer, then single click on << Download. When the process is complete then click on Done. Make sure when you transfer that the UDF file is transferred in the Solo Office directory. Normally this directory is located on your Desktop Computer at **C:\ TDS\SoloOffice.**

Go to Page XX

Windows 7 Users

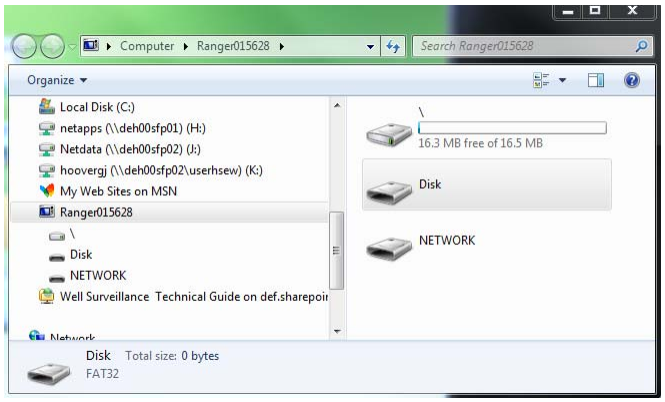
If you are using Windows 7 it is a little different. The Syncronization Program is called, “Windows Mobile Device Center”. Active Sync program will not work. Plug in your Data logger as before.

You should get a screen like this

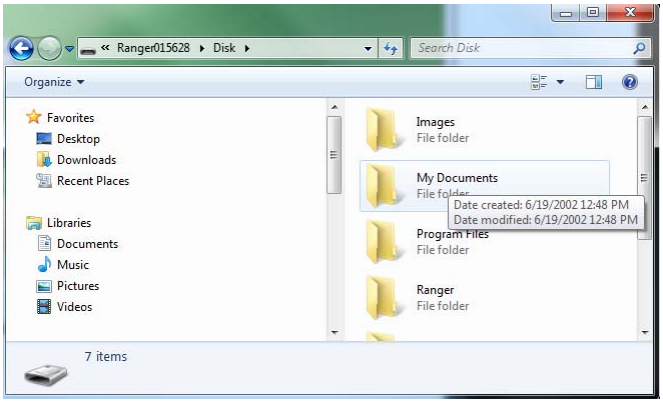
Then click on “Connect without setting up your device”.

Then click on “File Management”.

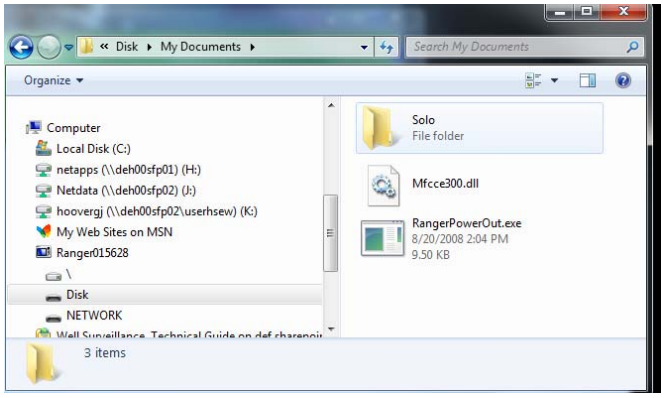
For Windows CE Rangers



Click on **Disk**

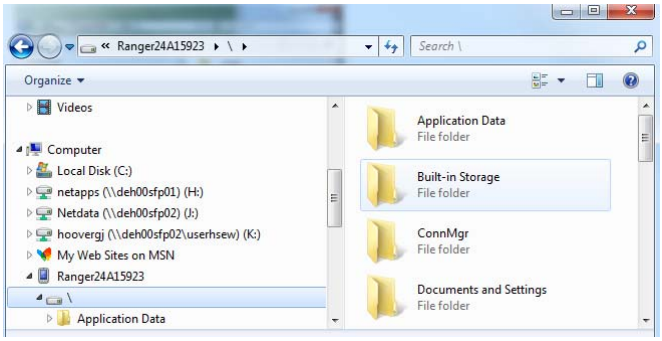


Then **My Documents**

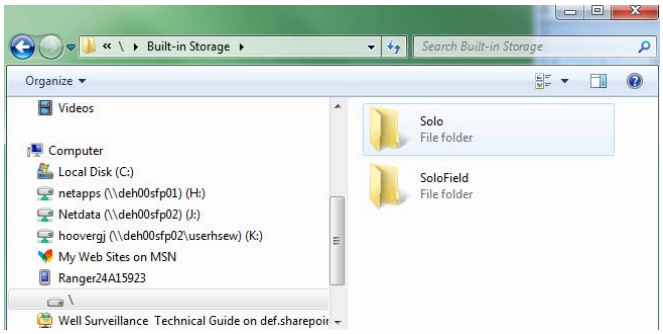


Then **Solo**.

For Windows Mobile 5 Rangers and Recons

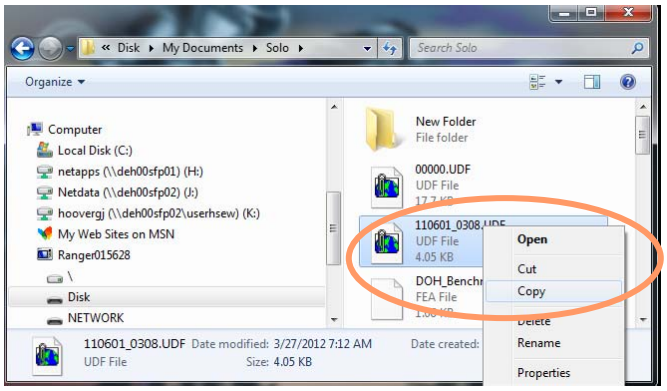


Click on **Built in Storage**



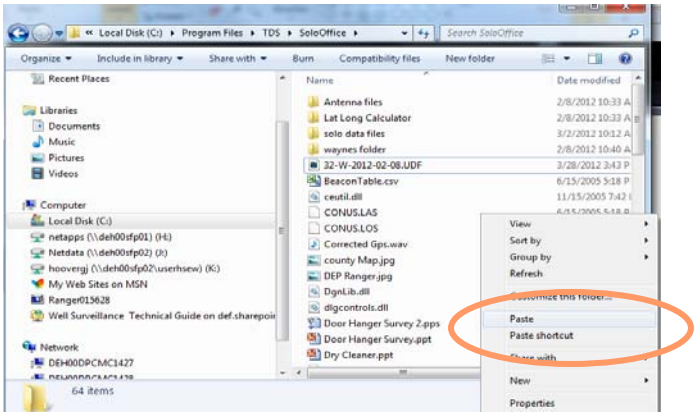
Then **Solo**.

Windows 7 Transfer
Windows CE



Right click on the UDF file then left click on Copy

Open up "My Computer" on your PC Navigate to **C:/Program Files/TDS Solo Office** Right click in the Solo Office Page on your PC then left click on Paste. Your file is now located on your PC.



*Note: If you create a shortcut to the folder On your desktop all you have to do is drag and drop***.**

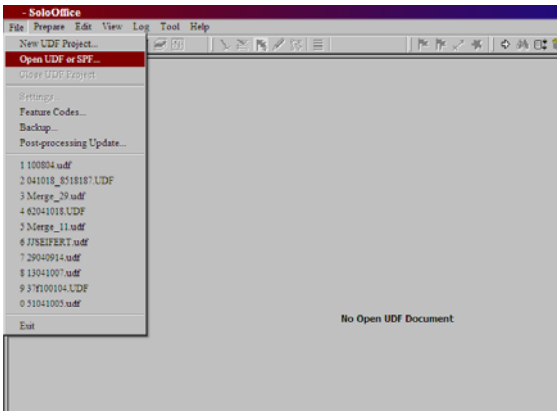
Note: The UDF files, the epf files and the feature file <u>MUST</u> be in the same directory.

Default Directories

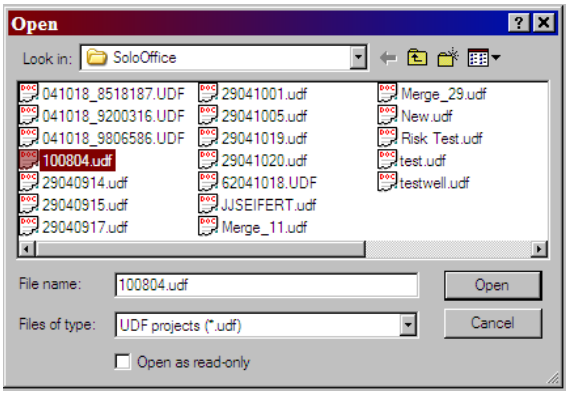
Data Logger	Data Logger File Directory	PC Directory	
Ranger CE	Disk/My Documents/Solo	C:/Program Files/TDS/Solo Office	
Windows Mobile Ranger	Built in Storage/Solo	C:/Program Files/TDS/Solo Office	
Windows Mobile	Built in Storage/Solo	C:/Program Files/TDS/Solo Office	

Some Counties have a place on their share drive as a main directory for downloading their files

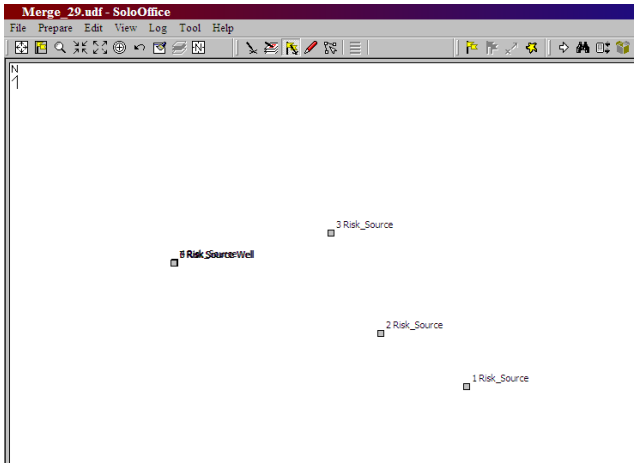
EXPORTING
Windows XP and Windows 7:
From this point forward, whatever operating system you have all procedures is the same



Once you have transferred the .UDF file from the DATA LOGGER to your PC the desktop computer and opened Solo Office, Click on **File** menu followed by clicking on **Open UDF or SPF….**

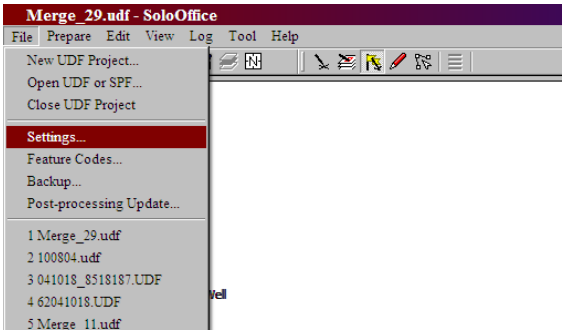


In the panel of the **Open** dialog box, click on the UDF file to highlight the file that you want to export. Then click on **Open**.



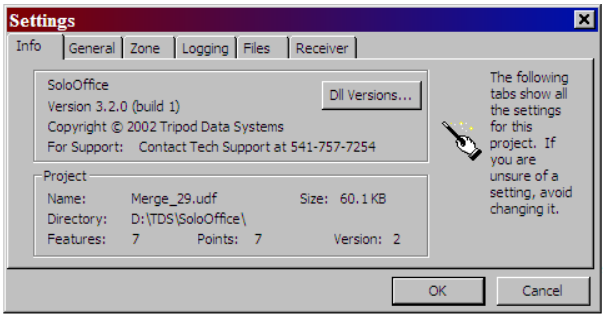
Your Logged points will appear on the Map View. If not click on **View| Zoom Everything**

File/SETTINGS:



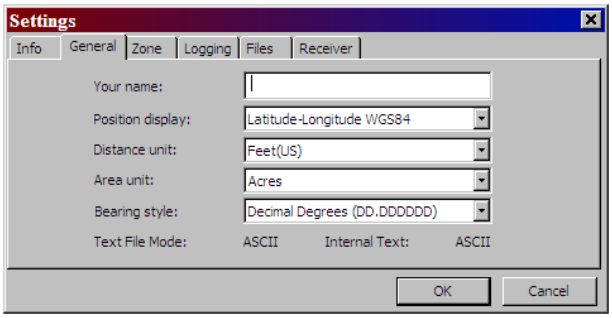
Configuring the settings will only need to be done the first time you open up Solo Office.
These next few screens deal with the settings dialog boxes **(File|Settings).**

Settings Info Tab:

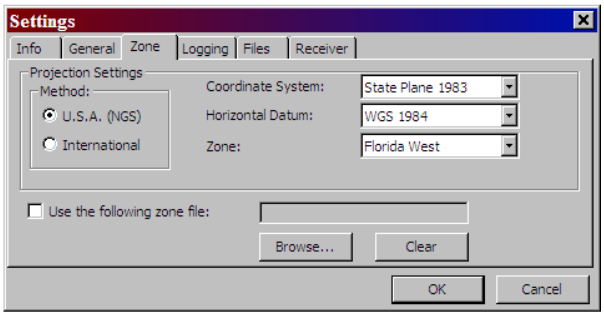


The **Info** page displays the version of the Solo Office program and the information of the current project.
Name This field displays the name of the currently opened project.
Directory This field displays where the current project file is stored.
Features This field displays the number of active and ended features in the project.
Points This field displays the number of points that have been logged in the current project.
DLL Versions Clicking on the **DLL Versions** button will display Versions dialog box. The Versions dialog will list the various .DLL files and their version number. This information could prove important if you require technical support.

Settings General Tab:

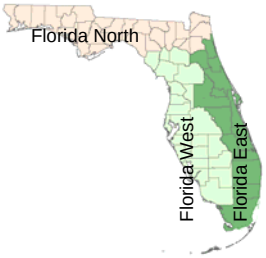


The **General** page is used to set the format of how positions will be displayed and the units that will be used for distance and area calculations.
Your Name You can personalize the project by entering your name, or any text, in this optional field.
Position Display Select from **Latitude- Longitude**, or **Northing-Easting.** We are **required** to use Latitude-Longitude WGS84.
Distance Unit Select the units that you want to use when entering and displaying distances. We are **required** to use Feet(US).
Area Units Select the units that you want to use when displaying calculated areas. There are no requirements.



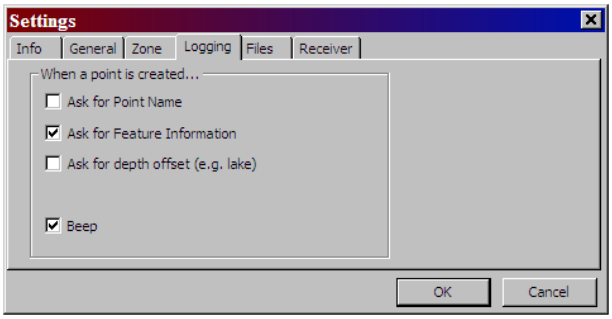
Settings Zone Tab:

The **Zone** page parameters for the **Well Surveillance Program** are:
In the **Projection Settings** click on the U.S.A. (NGS) radial button.
Coordinate System choose the **State Plane 1983.**
Horizontal Datum choose the **WGS 1984.**
ZoneTap the ▼ button and select the zone where you will be working. Select **Florida North** for the panhandle (beige), **Florida East** for the eastern peninsula (dark green), or **Florida West** for the western peninsula (light green). Leave the "Use the following Zone file" box unchecked.



Settings Logging Tab:

The **Logging** page has settings to specify the way the points will be logged. There are no specific requirements for this page.

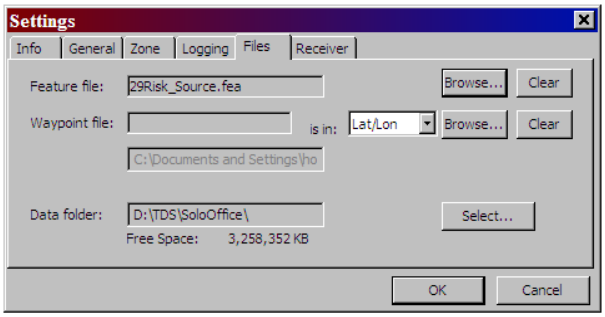


Ask for Point Name When this box is checked, you will be prompted to enter a point name for each point that is logged. Point names are limited to 20 characters. **Ask for Feature Information** When this box is checked, you will be prompted to enter feature and attribute information for each point that is logged. (REQUIRED)

Ask for Depth Offset When this box is checked, you will be prompted for a depth offset when logging a point The entered value is then subtracted from the calculated elevation. No Requirements.

Beep When this box is checked, a beep will sound each time a point is stored.

Settings Files Tab:



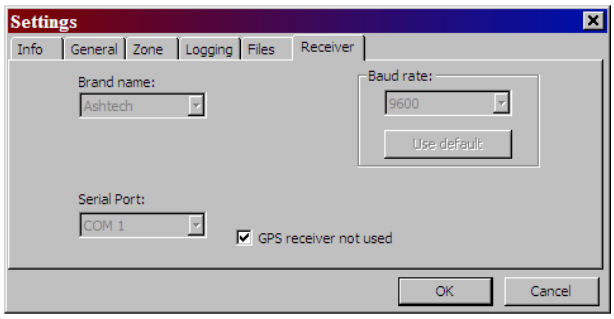
The **Files** page is where you select the optional Feature and Waypoint files that you want to use, as well as designating a data folder for the project.

Data Folder is the first thing you want to change on this page. This field displays the folder where data files are stored. The stored files include feature files, UDF files, zone files and basemap files. Click on the **Select** button to navigate to the appropriate directory/folder e.g. **C:\Program files\TDS\SoloOffice.** Your office may have a different location where you store your files.

Feature File This field displays the currently selected Feature File. (Masterhealth2005.fea)

Waypoint File You can download Waypoints files here: \\deh00sfp01\HSE_Public\HSEW\WellSurveillance_WaypointFiles.

These data points are updated nightly for the latest Facility and Well points. Waypoint files can be used in Solo Office and Solo Field



The **Receiver** page contains the settings that allow you to specify which brand of GPS receiver you will be using in the field.

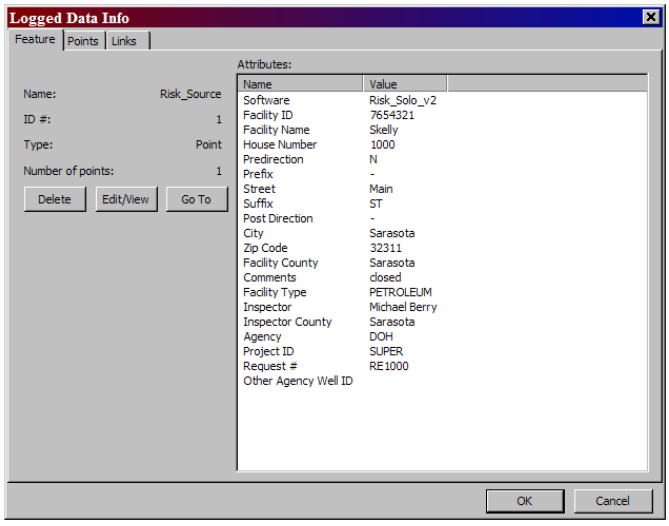
We do not use Solo Office in the field, so just check the box GPS receiver not used.

Now that you have the settings all set up, you will not have to visit them again unless you need to make a change. As discussed earlier in the document you can edit your UDF file in Solo Office. This is easily done and should always be done before exporting to a text file.

Editing Collected Data

This section will discuss the different ways in which you may edit data that is stored in your project file. Solo Office allows you to edit both the point location and the attribute information for a feature. *Note: It is advised not to edit the point location.*

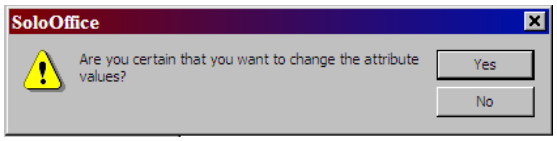
You can edit the attributes for a logged point by following the steps below.



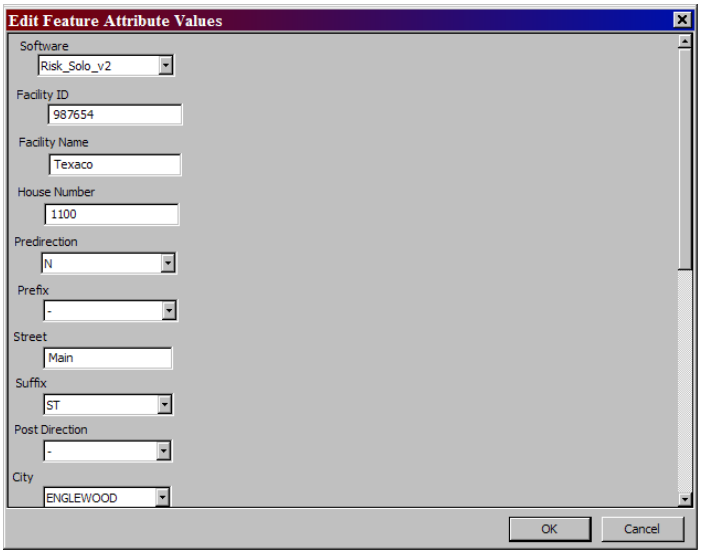
Note: The Feature Code that was used when the point was originally logged must be in the Feature file that is currently in use in order to edit the attributes of the point. All of your original menu selection items will be available.

Double clicking on the logged point the **Logged Data Info** dialog box will appear.
Click on the **Feature** tab to make sure that the feature and attribute information is displayed.
Click on the 

button to display the **Edit Feature Attribute Values** dialog box. You may edit any of the attributes within the limits of the parameters established in the Feature File. You will be asked if you want to save the changes.



Click on the **Yes** button and make the necessary changes to the **Edit Feature Attribute Table** as seen to the left.

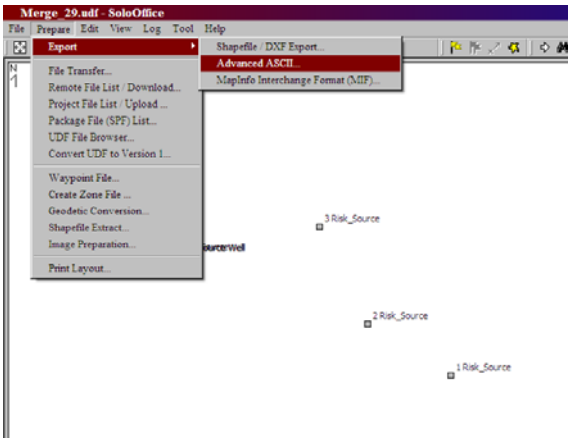


Click on the 

button to save the changes and return to the **Logged Data** Info dialog box.

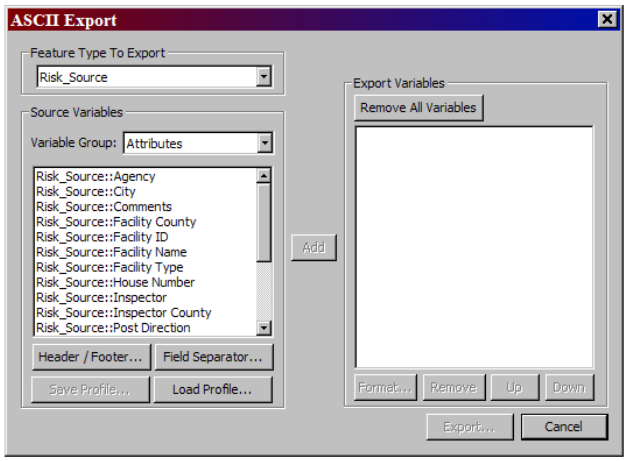
Click on the 

button again to return back the Map View.

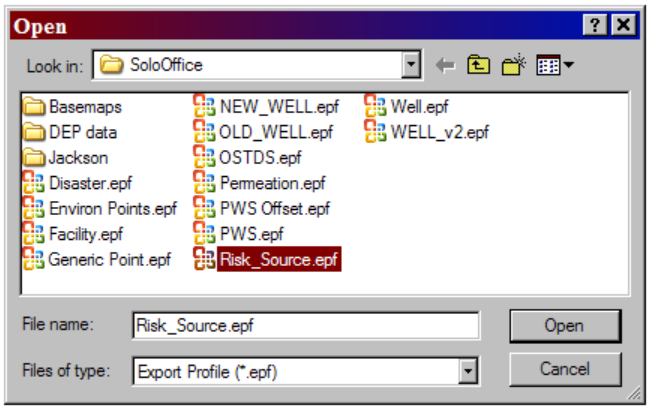


After returning to the Map View Click on **Prepare / Expor t / Advanced ASCll**

The **ASCll Export** Dialog box will appear.

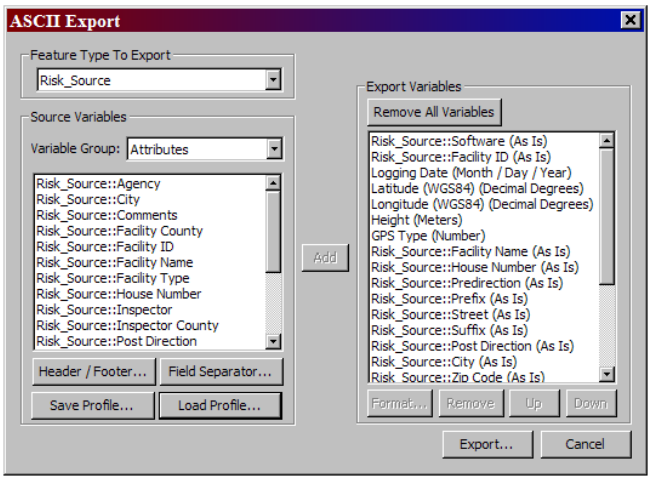


Click on the **Load Profile** button below the left panel.

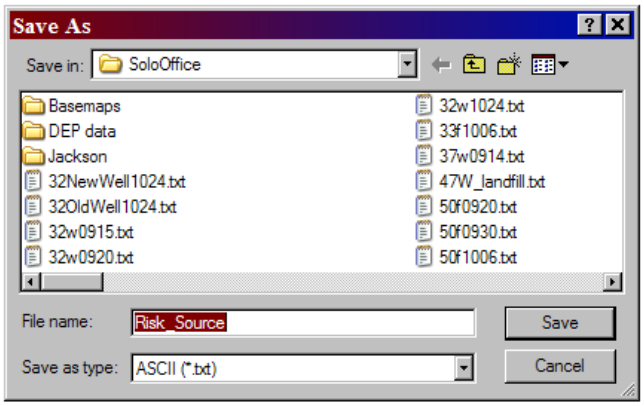


Select which export profile format that you will be exporting from. Click the **Open** button at the bottom right of the Open dialog box.

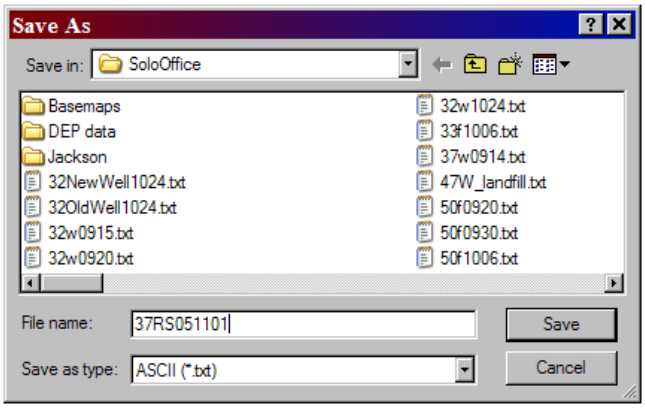
The right panel has been populated with the export features from your UDF file.



<u>Do not modify the Profile file</u>. If you do, we will not be able to append your data into the HQ database. Click on the **Export** button to bring up the **Save As** dialog box (seen below).



At the **File name** it will default to the name of the type of file you are exporting. The nomenclature for naming a file is shown in the next figure.



You will type in your **County Number** followed by an **RS** *(Risk Source)*, type in the **Year,** the **Month,** and the **Date**. Then click on the **Save** button**.**

For a well, type **County Number** followed by a **W** *(Well)*, type in the **Year,** the **Month,** and the **Date**. Then click on the **Save** button.
In the upper left hand area of this dialog box it tells you where your file is being saved. Make sure this is where you want your file to be saved. If it isn't click on the drop down in the *Save in* field and browse to the correct folder. Normally, it is **C:\Program Files\TDS\SoloOffice.**

All that is left is to send the files to HSE_GPSData via e-mail.

NOTE: Prior to sending GPS data, It is highly recommended that you check it first. One way to do this is to export your data as a kml file and open it in Google Earth
(instructions Below)

Exporting Solo Office data in *.kml format

1. Download the two export feature files from Sharepoint. They are located on the Well Surveillance page in the SOLO\SOLO\SOLO Support Files folder.

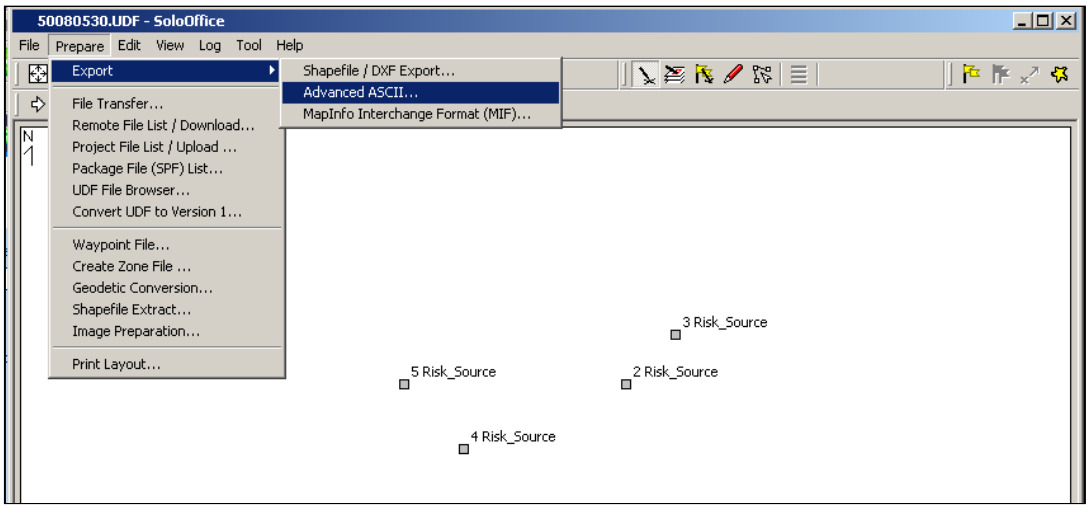
- RISK_KML2.epf
- WELL_KML_3.epf

Place these files in your normal SOLO Office folder. It usually defaults to:
My Documents\SOLO Office

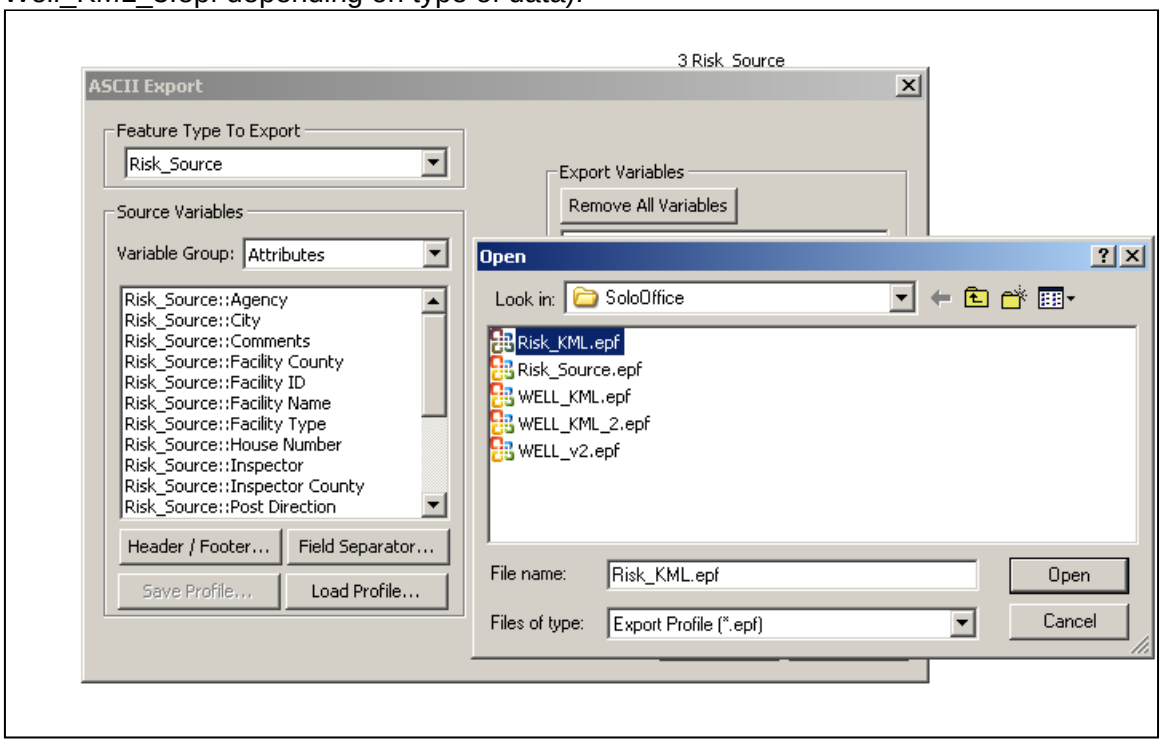
Please contact Michael Berry or Gilbert Hoover if you have difficulty finding the files.

2. Open your *.udf file in SOLO Office

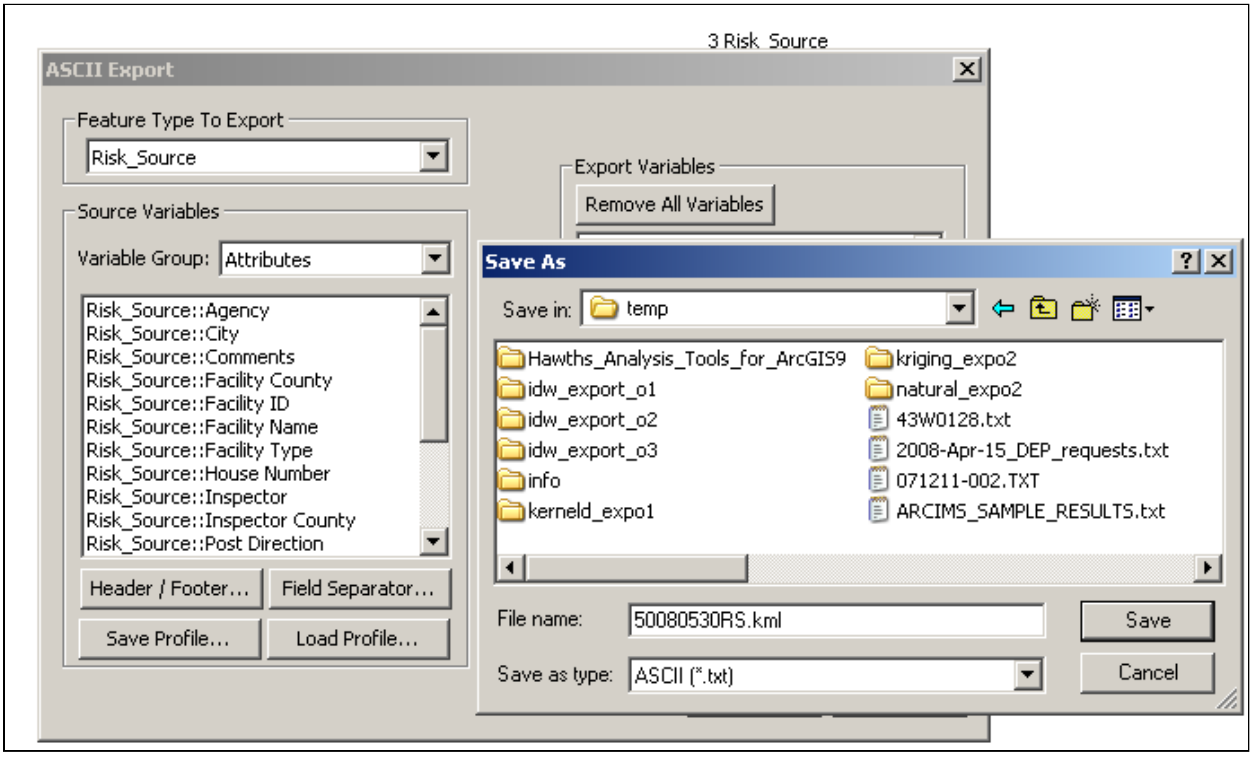
3. Click on Prepare and drill down to Export → Advanced ASCII…



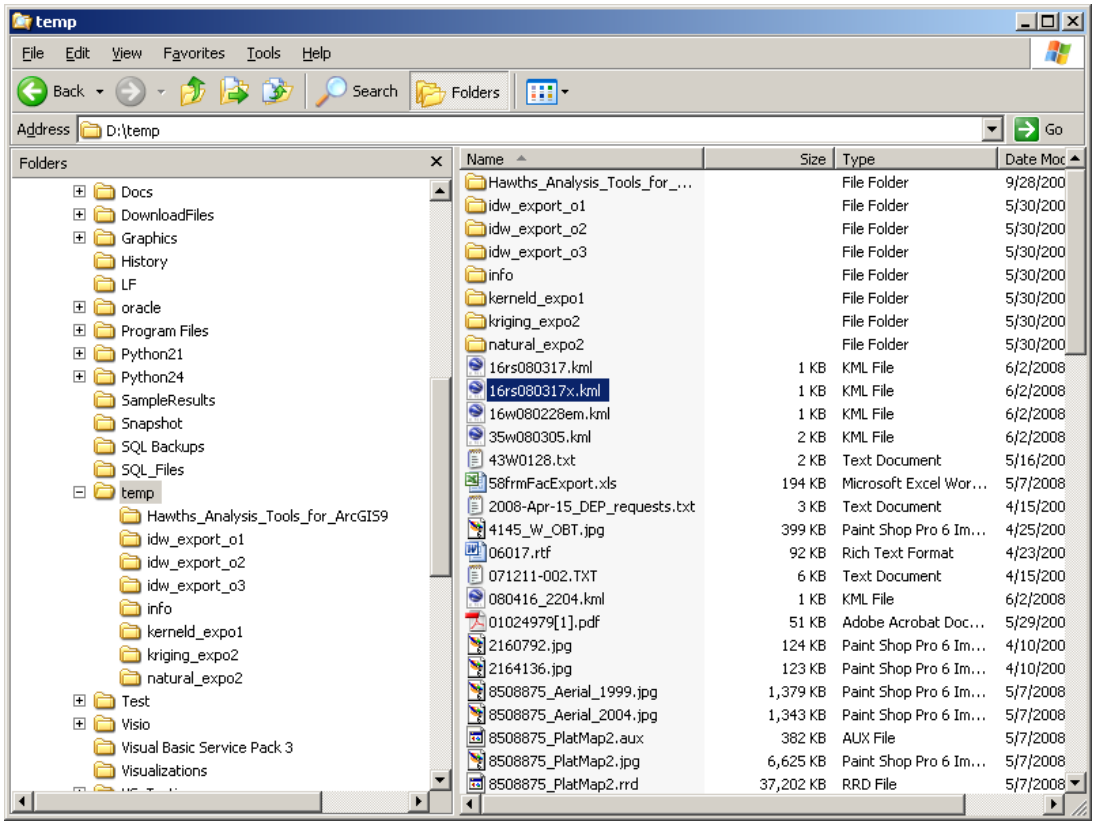
4. Click on the Load Profile… button and select the appropriate export profile (Risk_KML2.epf or Well_KML_3.epf depending on type of data).

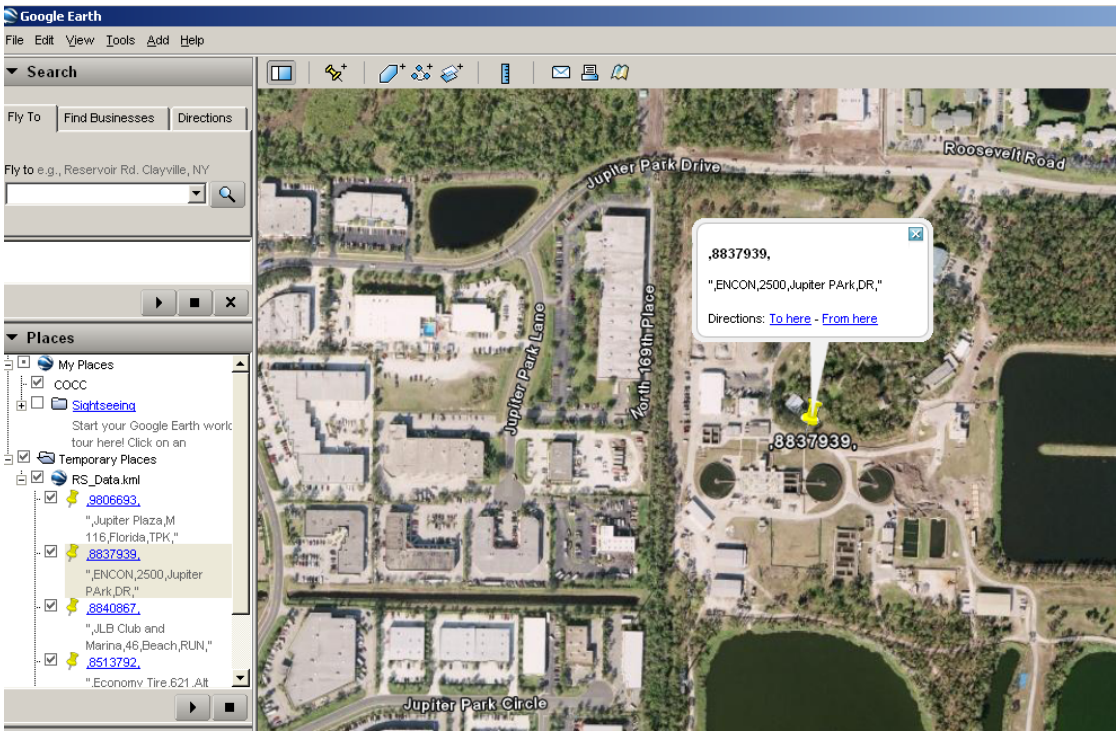


5. Click on Export… and browse to where you want to save the file. Name the file, and make sure that you give the file the extension ".kml"



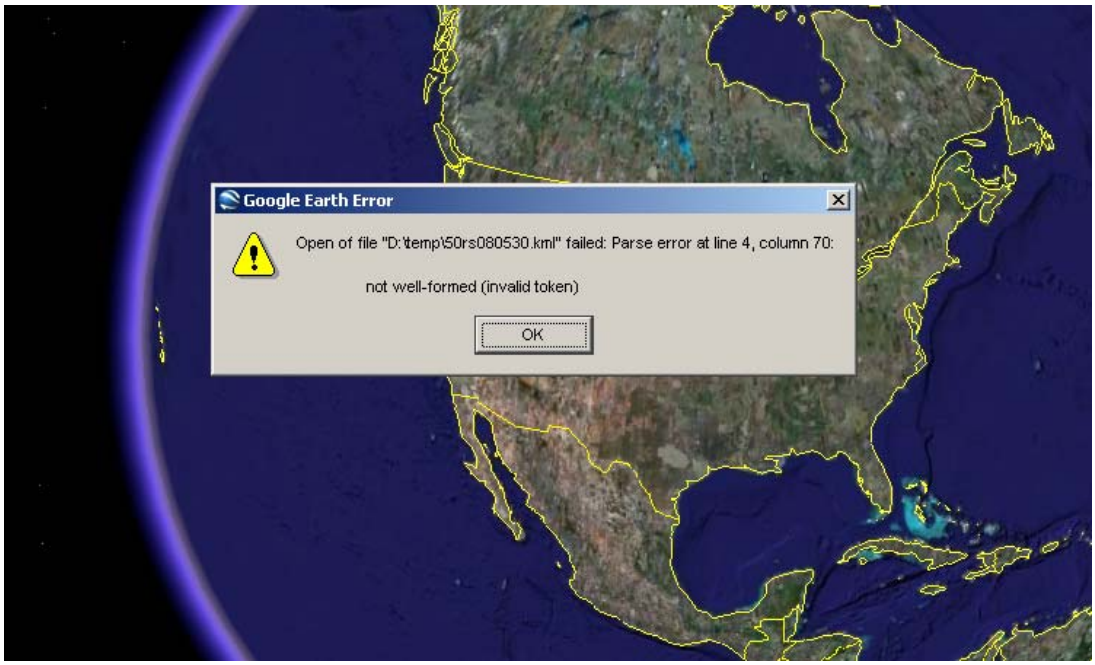
6. Browse to your kml file using Windows Explorer and double-click on it. It should open in Google Earth.

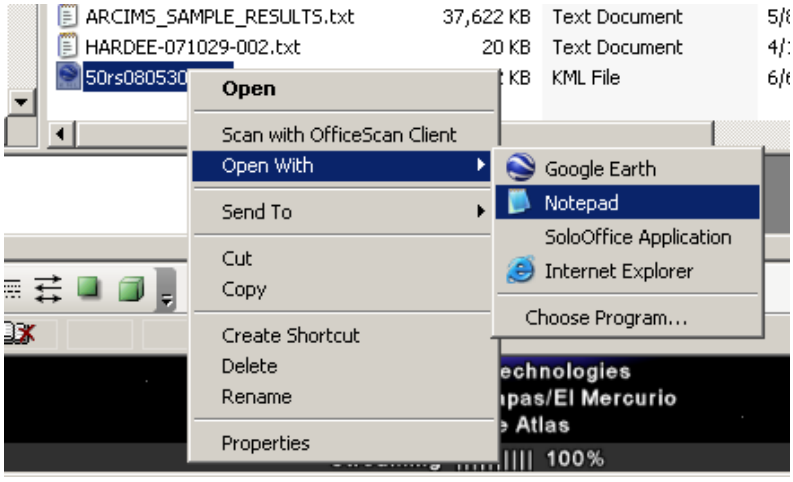


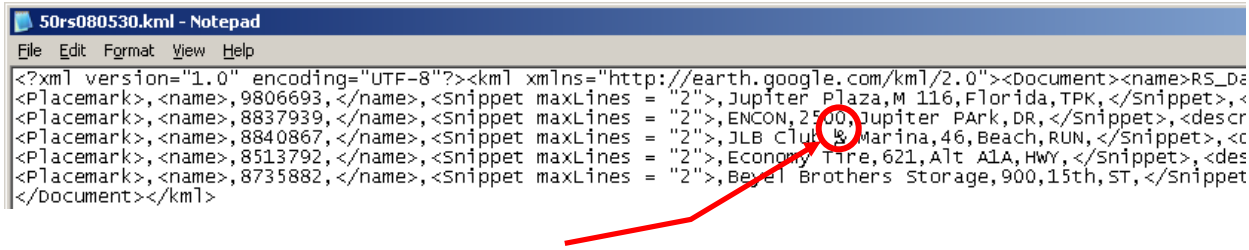


7. Review your locations prior to exporting as normal and sending them to Tallahassee.

NOTE: Certain characters, such as the ampersand (&), may be misinterpreted by Google Earth as programming marks and will cause an error message to appear. Fortunately, Google Earth tells you where the error is and in what column. You can open the kml file using notepad and view/edit as needed. The latest epf files (WELL_KML_3 and RISK_KML2 should not have this problem).







THE END

APPENDIX C
Laserfiche Web Access User Guide and Signature Stamp

Laserfiche Web Access
v 8.x

User Guide

March 22, 2012

Laserfiche is the Well Surveillance Program's electronic archive system. It allows the Program Office to share reports, maps, and other data with the County Health Departments (CHDs).

Logging In

To log in to the Well Surveillance Laserfiche portal, you must first be registered in the system. The user name and password for Laserfiche are separate from your network login credentials. If you don't have a user name and password, please contact the program office and one will be set up for you.

Once you have your login credentials, point your web browser to http://dohswapeh0001/laserfiche8. You will see the login screen (Fig 1). Make sure that the "Use Windows Authentication" check box is unchecked and the "This is a public…" radio button is selected. Enter your user name and password and then click the "Login" button.

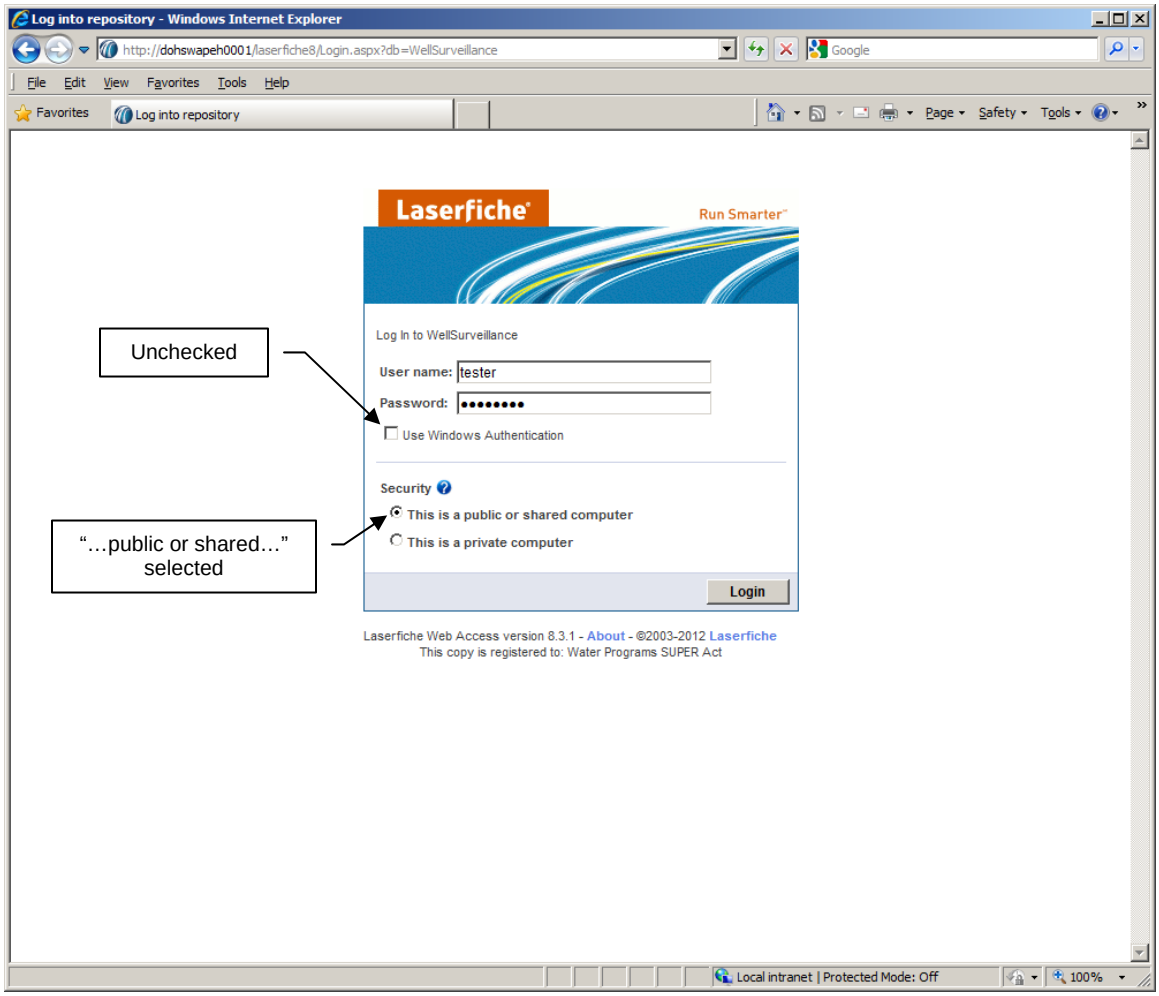


Figure 1. Login Screen

Root Folder

Once you have logged in, you will see the root folder. There are several things that you should be familiar with (Fig 2).

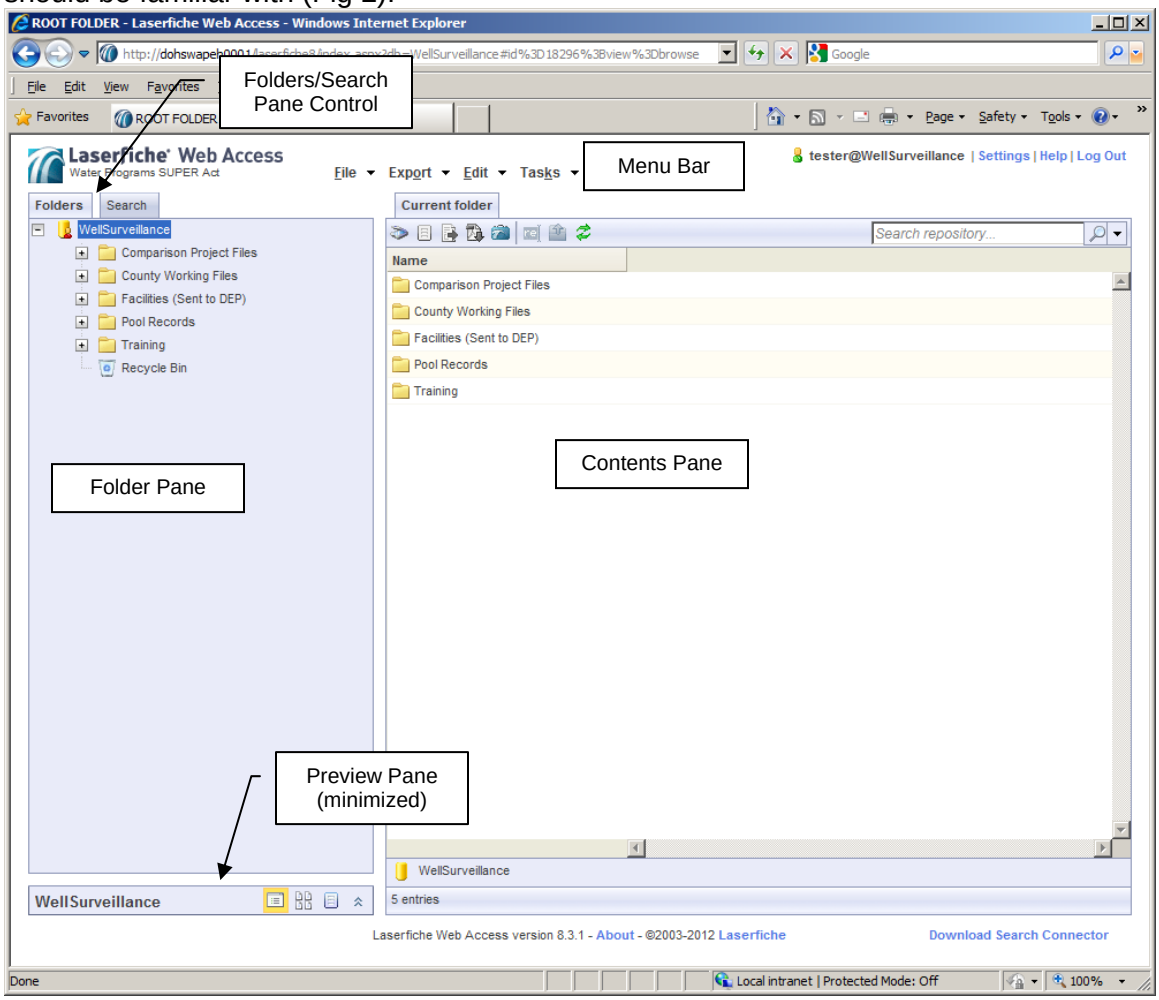


Figure 2: Root Folder

Folder Pane:

This pane shows a standard tree view of your folders. Clicking on the plus signs to the left of a folder will expand them. You can navigate between folders by selecting them. The selected folder will then be displayed in the contents pane.

Not displayed is the Search Pane. Clicking the tab control on top of the pane will toggle between search and folder panes.

Contents Pane:

This pane shows the currently selected folder or document. New in version 8.x is a tabbed view.

Preview Pane:

This pane allows you to see a thumbnail view of the document being displayed in the contents pane. You can also view metadata or a preview of a document selected in a folder (though not yet opened).

Menu Bar:
This bar contains nested menus that allow you to utilize many of the functions and tools in Laserfiche 8.

County Working Folder
If you select "County Working Files" in the folder pane and expand it (by clicking the plus sign to the left of the folder), you should see at least two subfolders: the county (or counties) that you are responsible for and a trash can folder.

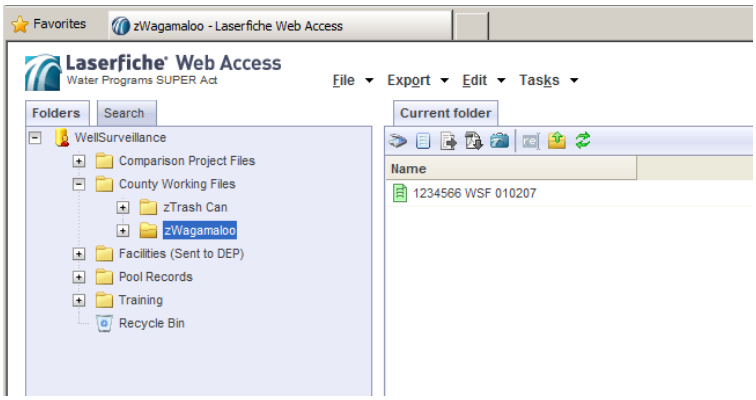


Figure 3. County Working Folder

Viewing Metadata:
Selecting your county folder will display a list of any files in the contents pane (Fig 3).

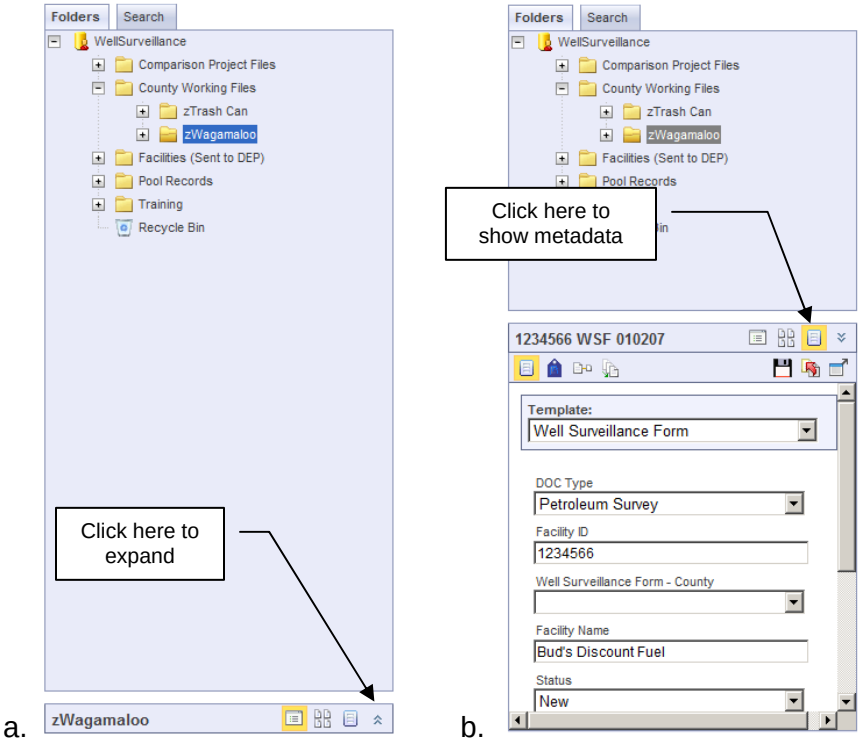


Figure 4: Viewing Metadata in the Metadata Pane

By default, only the name of the file is displayed. However, each file in Laserfiche is assigned metadata, which gives you information about the file, such as the type, the status, etc. You can get more information

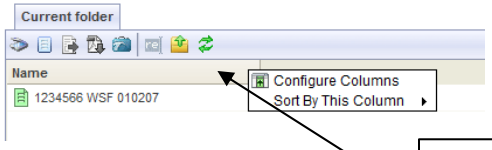
about a file by viewing its metadata in the preview pane.

To view the metadata, make sure that the document is selected, then expand the preview pane (Fig 4a). Select the metadata icon, if necessary (Fig 4b).

Column Headers:

There is another way to get information about a document at a glance and that is to change the column headers in the contents pane. First, right-click on the column header and select "Configure Columns" (Fig 5a).

a.



b.

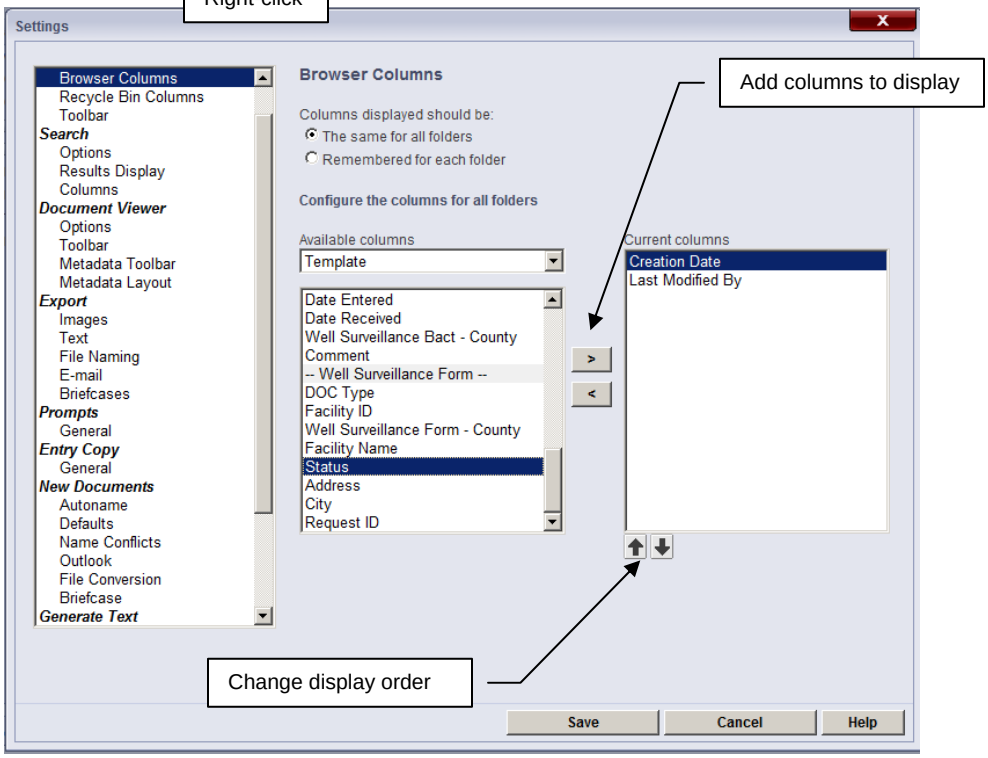


Figure 5: Changing Browser Columns

In the settings window, you can move columns from the "Available columns" pane to the "Current columns" pane using the left/right arrow buttons between the two panes (Fig 5b). You can control the order that they display by moving them up or down in the current column pane by using the up/down arrow buttons below the pane.

Note that the default list of columns contains general categories, such as creation date, number of pages, etc. You can add the metadata fields, by selecting "Template" in the dropdown menu just above the available columns pane.

You can also choose to display your selected column headers in all folders or just the current one.

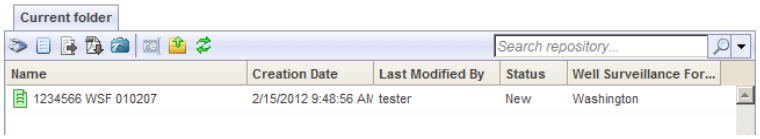


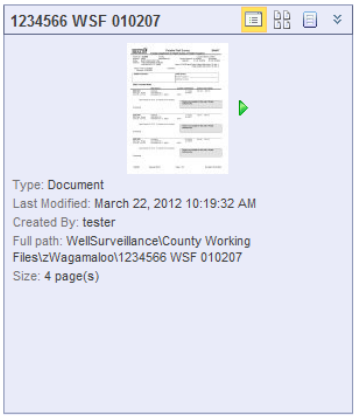
Figure 6: Column Headers

Once you have added your columns, click "Save". Your column headers should now be visible in the content pane (Fig 6).

Previewing Documents:

You can preview selected documents page by page (Fig 7a) or you can view thumbnails (Fig 7b) by clicking on the appropriate control in the preview pane.

a.



b.

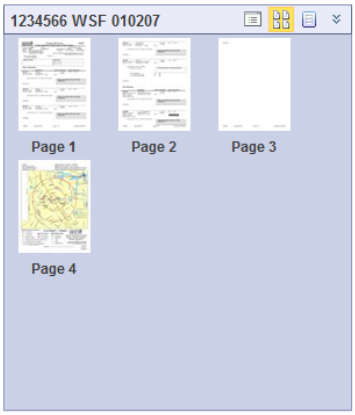


Figure 7: Preview Pane

Opening Documents:

To open a document, double-click on the document name. It will open in a new tab.

Document Viewer

Once a document has been opened, the view in the browser window changes significantly (Fig 8). You should be familiar with this view. All panes in this view can be toggled on and off by using the appropriate controls in the document viewer toolbar.

Image Pane: This is the primary pane, and it shows the document itself and any annotations.

Metadata Pane: This pane displays the metadata associated with the document.

Thumbnails Pane: This pane provides a view of your document showing several pages at once. You can do several things with your document in this pane:

- Rotate pages: Right click on an image and select "Rotate"
- Move pages: Click and drag images to move them within the document
- Jump to page: Click on the thumbnail image and the image pane will jump to the selected page.

- Create new document from selected page: Right-click on a thumbnail and select "New Document"

Annotations Pane (not visible): This pane allows you to view and modify annotations within the current document. You can view the annotations pane by clicking the tab control on top of the metadata pane.

Text Pane (not visible): Many documents have a text file associated with them. This file can be extracted through Optical Character Recognition (OCR). This pane displays any text linked to the document.

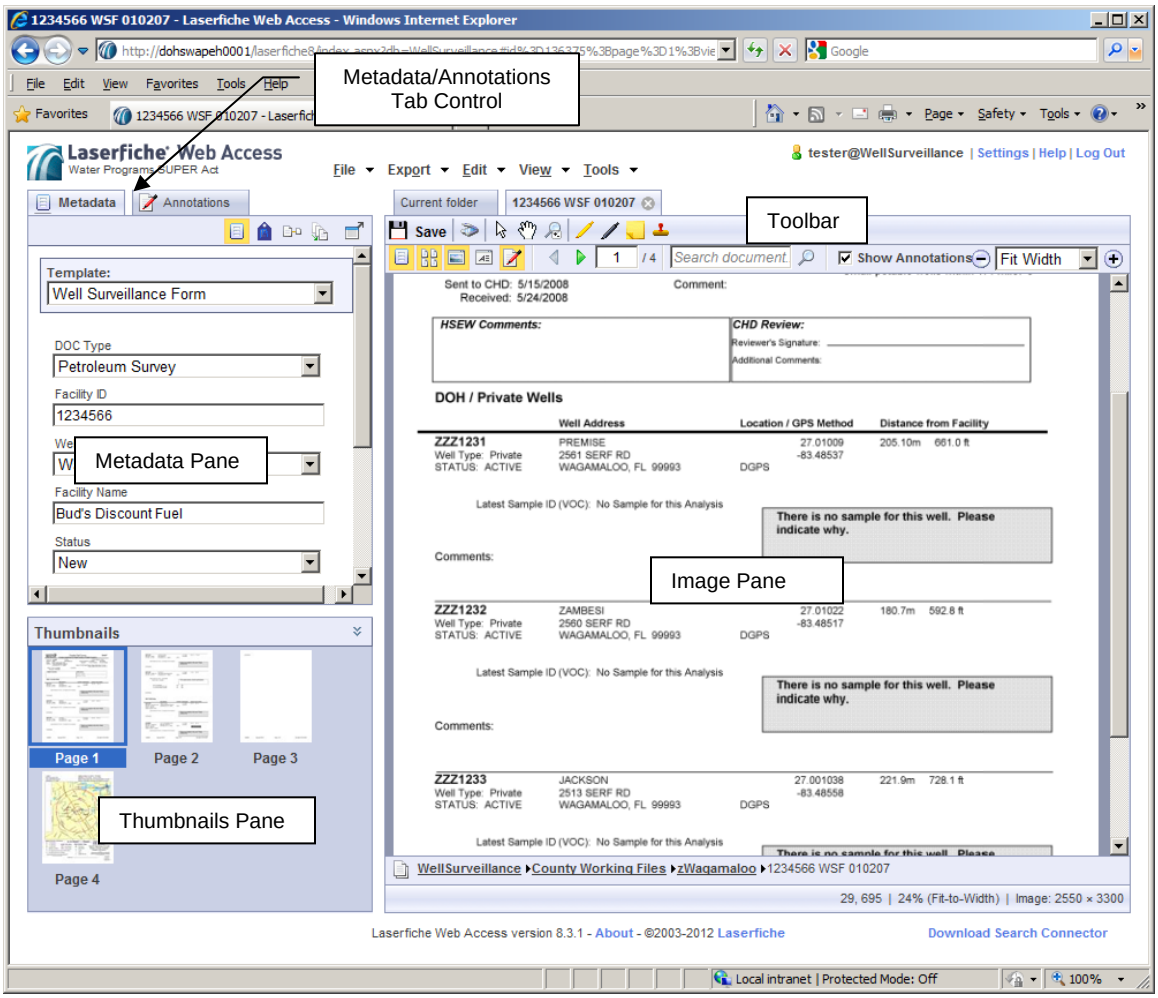
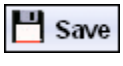


Figure 8: Document Viewer

Document Viewer Toolbar:
This toolbar (Fig 9) allows you to execute frequently-used commands and operations. Some of the important tools are listed below.



Save: Saves all changes you made to the document.

 *Selection:* Allows you to select annotations

Pan: Allows you scroll by moving the cursor in the desired direction.

 *Add Highlight:* Allows you to highlight areas of the image. If there is OCR'd text in the area, it will also be selected.

 *Add Redaction:* Allows you to redact a portion of an image. Also, like the highlighter, it will redact any OCR'd text in the area.

 *Add Sticky Note:* This tool will allow you to add a sticky note to the image.

 *Add Stamp:* This will bring up the stamp selection window and will allow you to add a stamp to a document.

 *Show Metadata:* This toggles the metadata pane on and off

 *Show Thumbnails:* This toggles the thumbnail pane on and off.

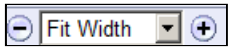
 *Show Image:* This toggles the main image pane on and off.

 *Show Text:* This toggles the OCR'd text on and off.

 *Show Annotations:* This toggles the annotations pane on and off.

Navigation: Go to the previous/next page or jump to a specific page within a document.

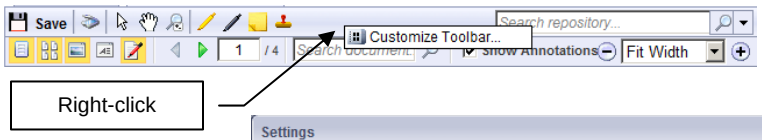
Search OCR'd Text: Searches for text within a document.



Page Zoom: Allows you to zoom in or out.

You can customize the toolbar to add other frequently-used tools and remove tools that are rarely used. Simply right-click on the toolbar and select "Customize Toolbar…" (Fig 9a). The settings window will open. Add controls to your toolbar by moving them from the "Available actions" pane to the "Current actions" pane (Fig 9b).

a.



b.

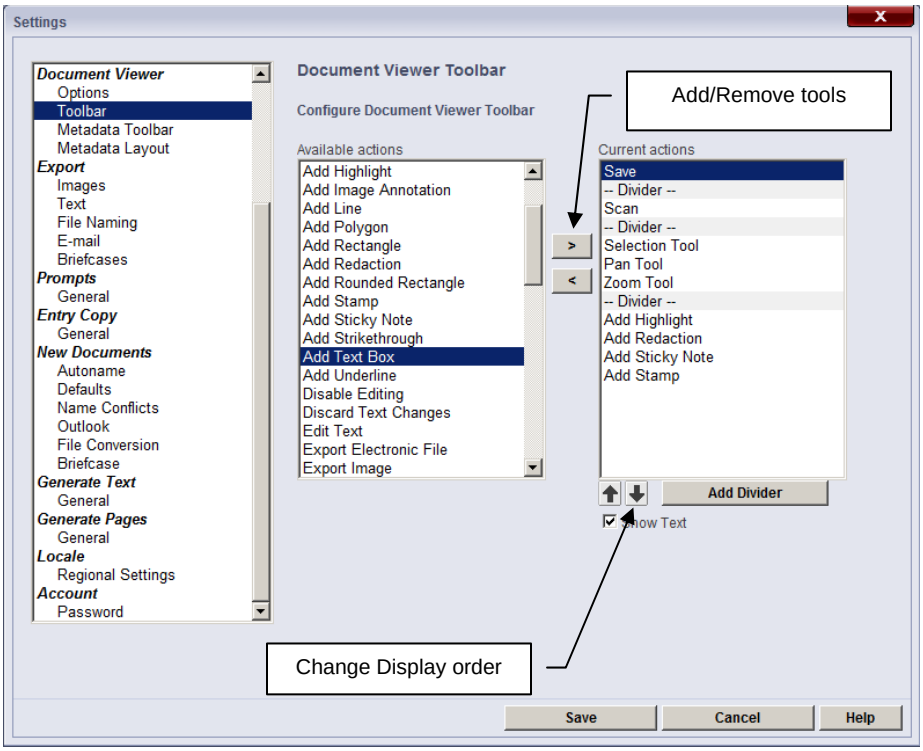


Figure 9: Customizing the Toolbar

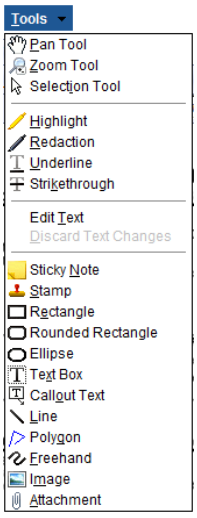


Figure 10: Tools Menu

Annotations:

There are four annotation commands on the toolbar already: the highlight tool, the redaction tool, the stamp tool and the sticky note tool. These and others can be accessed through the Tools menu (Fig 10). Other tools in are listed below.

 *Underline:* Allows you to underline a block of text. If there is OCR'd text in the area, it will also be underlined in the OCR file.

 *Strikethrough:* Allows you to line through a block of text in the document. If there is OCR'd text in the area, it will also be struck.

 *Rectangle:* This allows you to add a rectangle to the document.

 *Rounded Rectangle:* This allows you to add a rounded rectangle to the document.

Ellipse: This allows you to add an ellipse or circle to the document.

Text Box: This allows you to add a text box to the document. The text can be edited at any time thereafter.

Callout Text: This allows you to add a callout box to the document. Like the text box, the text inside can be edited at any time thereafter.

Line This allows you to add a line to a document.

Polygon: This allows you to add a free hand polygon or multi-vertex line to a document.

Freehand: This allows you to add a freehand scribble to the document.

Annotation Properties:

Depending upon the type you can view and change appearances, color, style, font, or any text associated with the annotation. You can also view the metadata for the annotation. There are two ways to do this: using the annotation pane (Fig 11) or by right-clicking on the annotation itself (Fig 12).

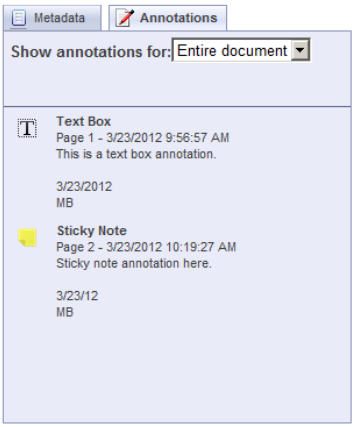


Fig 11: Annotation Pane

To open the annotation pane, make sure that it is selected in the document viewer toolbar (Fig 8), and then click on the tab control above the metadata pane. You can jump to any annotation in the document by single-clicking on the annotation. You can open the properties window (Fig 12b) by either double-clicking on the annotation or right-clicking and selecting "Properties".

To view an annotation's properties from the annotation itself, make sure that the selection tool has been chosen, then right-click on the annotation and select "Properties" (Fig 12a).

The Annotation Properties window will appear (Fig 12b) and you can view the properties as you need.

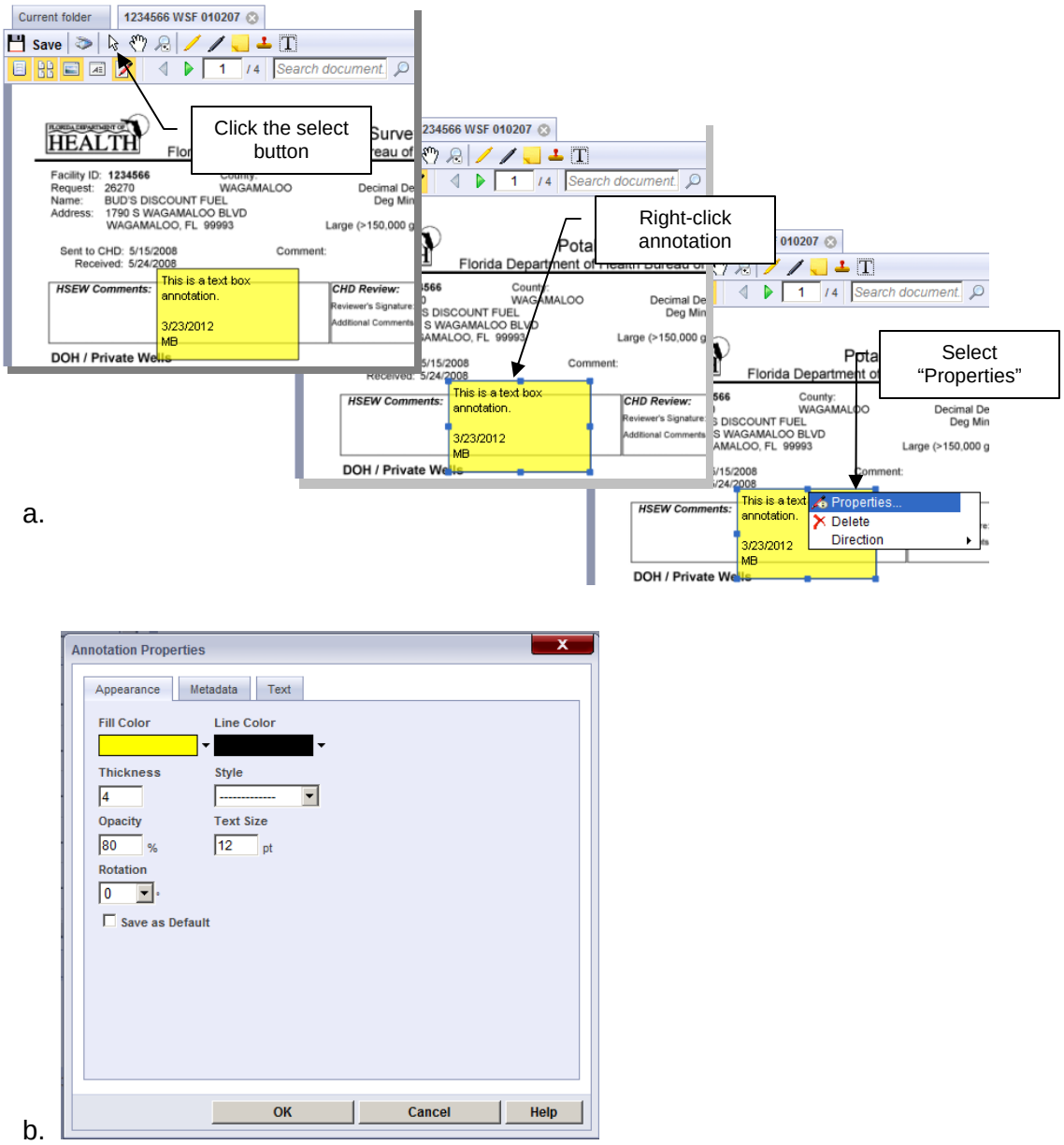


Figure 12: Annotation Properties

Stamps

You can add a stamp to your chosen document using the stamp tool. There are two types of stamps: public and private. Public stamps are available to anyone that has access to the Laserfiche server. Private stamps are available only to the individual who created the stamp.

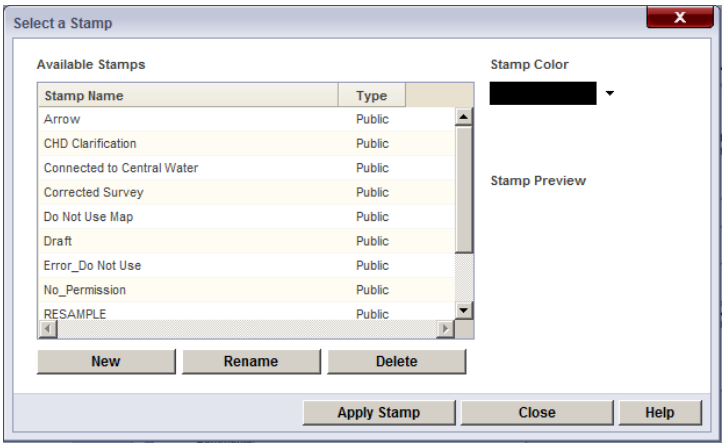


Figure 13: The Select a Stamp Window

To add a stamp to the document, click the stamp tool. The Select window will open (Fig 13). Select the stamp you wish to use, click the "Apply Stamp" button, and then click on the document to place it.

If you want to create a custom private stamp, then click the "New" button located under the stamp name pane. The New Stamp window will open (Fig 14).

Make sure that you name your stamp something useful. Also, make sure that you select "Private" as the stamp type. You don't want the whole world using a stamp with your signature.

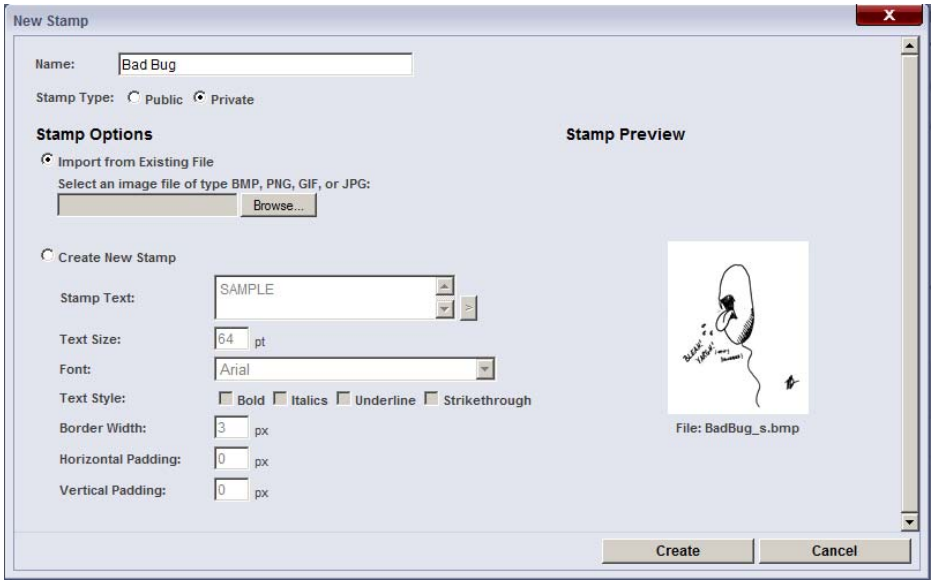


Figure 14: New Stamp Window

You now have two options as to how to make your stamp. You can select an existing image file of no more than approximately 250KB in size, or you can create a simple text stamp. Once you've either selected your image file or entered the stamp text, click the "Create" button. You will be sent back to the select window, where you will select your stamp and then apply it to your document.

Note that if you choose a color image file for your stamp, Laserfiche will convert it to a monochrome file.

Searching

Laserfiche contains a very powerful search tool. Its searching and annotation capabilities make it much more than a simple file cabinet. There are two main ways to search within this program (Fig 15). There is a quick search tool in both the folder and the document views, and there is the search pane that allows more complex searches in the folder view.

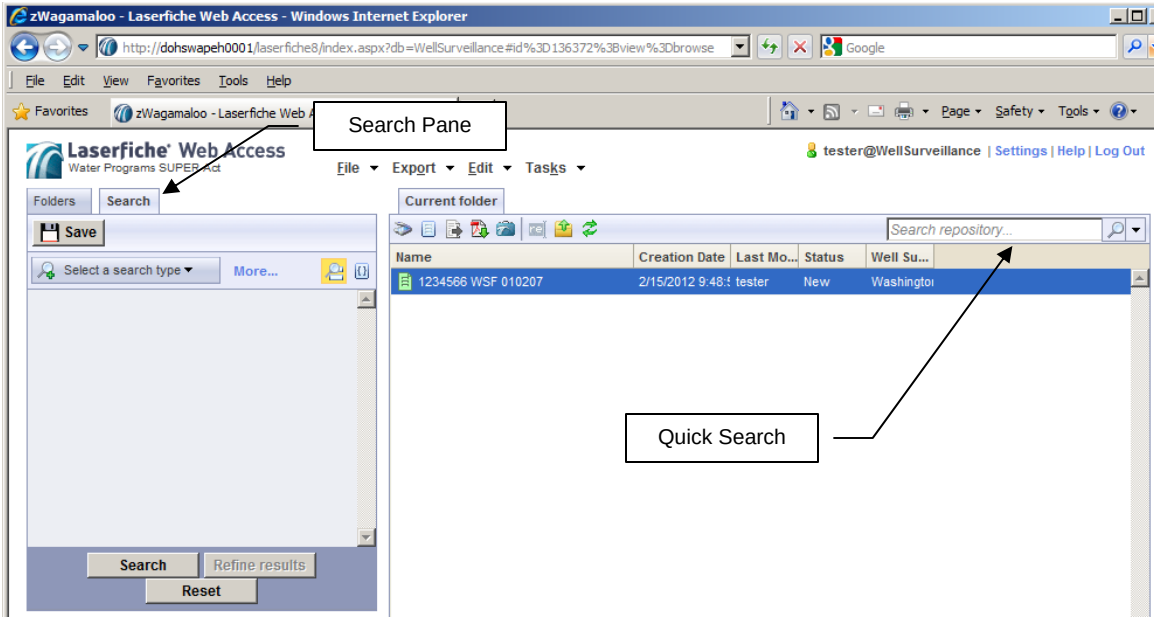


Figure 15: Search Methods

Quick Search

As the name implies, the quick search tool (Fig 16) is best for quick, simple searches. You can set the quick search options at any time, and they will remain until changed. You have four basic options, any of which can be selected singly or as a group. Once you have set your options, simple type the search string into the text box and click the search key.

Search Text: A text search looks inside all OCR'd text within the repository for a specific search string. This is a relatively slow search.

Search Entry Names: This searches the file names within the repository. By default, it will search for file names containing the text, so there is no need to use wildcard characters (*, %, etc). This is a relatively fast search.

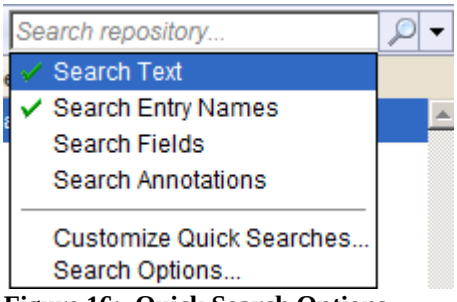


Figure 16: Quick Search Options

Search Fields: This searches the metadata fields of all documents in the repository. It is also a relatively fast search.

Search Annotations: This searches the annotations within the repository. Like the text search, it is relatively slow.

Search Pane

The search pane (Fig 17) allows for more complex and specific searches. Like the quick search, you can select one or more categories to search in. In addition to the same four categories as the quick search, it contains several other categories which can be searched in any combination. If you find that the list is not enough, you can add more by selecting "More…" from the dropdown menu and adding them via the Search Attributes window (Fig 18).

Some of the main search categories are listed below. Definitions for the others can be found in the attributes window.

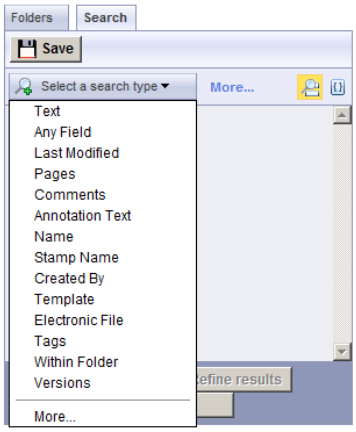


Figure 17: Search Category Dropdown List

Last Modified: Searches for documents within the repository that were created on a specific date or within a date range.

Pages: Searches for documents containing a certain number of pages or a page range. Also can search for documents with or without OCR'd text.

Template: This is similar to the any fields search, but it speeds things up by limiting the search to a specific metadata template.

Within Folder: This limits the search to specific folders within the repository. This can speed up a search considerably.

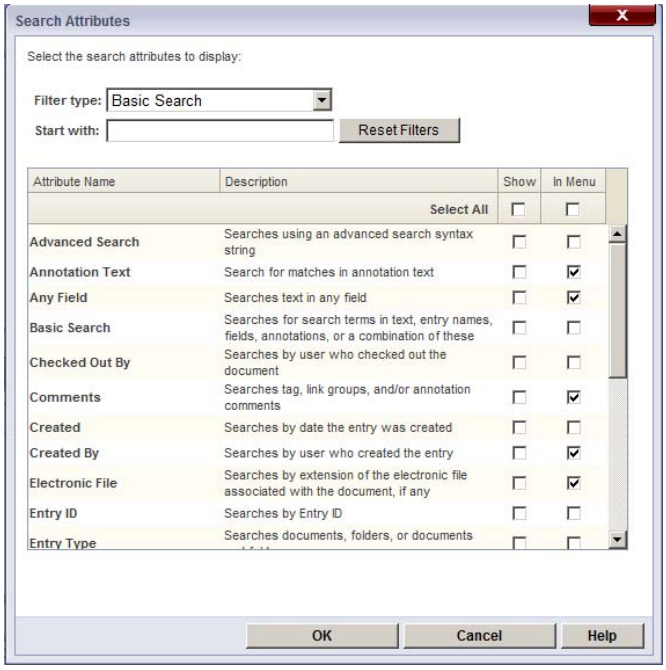


Figure 18: Search Attribute Window

Exporting Documents

Documents can be exported one of two ways, depending upon which view you are in. The toolbar in the folder view has an Export PDF button ( ). Simply select the document you wish to export and click the button. You can also select "PDF…" from the Export menu in both the folder or document views (Fig 19).

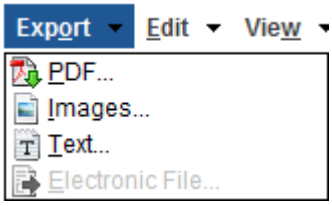


Figure 19: Export Menu

Selected Folder Information

Some of the folders you will see when you log in and their general contents are listed below.

Comparison Project Files: This folder contains files that review facility locations. Most of them compare DOH location data with DEP location data and come to a conclusion which is correct. There are other records which are copies of correspondence related to locations and don't necessarily compare datasets. Files are organized by location county.

Contamination Areas: This folder contains files that are related to well surveillance areas. Files are organized by WSA number.

Draft Requests: This folder contains draft surveys, including annotations. Files are organized by facility ID.

Facilities (Sent to DEP): This folder contains final versions of surveys that have been approved and sent to DEP for reimbursement. Files are organized by facility ID.

Send to DEP in Process: This folder contains surveys that have been completed, QA'd and undergone final supervisory review, but have not yet been sent to DEP. This is a temporary folder. Files located here will be moved to *Facilities (Sent to DEP)* once they have been sent on to DEP.

State Working Files: This folder contains surveys that have been reviewed by the CHDs and are in the final QA process. This is also a temporary folder. Files located here will be moved to *Draft Requests* once the QA has been completed. Some files which have gone through all but the final supervisory review are also parked here. They will be moved to *Send to DEP in Process* for final review and sending.

For More Information

For a more detailed guide, you can view the Laserfiche website manual by clicking on "Help" in the upper-right corner of your Laserfiche window.

Version 1.1 (3/26/2012)

Use these instructions to create a signature in Laserfiche

Creating a signature stamp for Laserfiche Web Access

This document describes the process of creating signature stamp for use in the Bureau of Water's Laserfiche Web Access website.

1 **Get Signature Template**
Go to the Well Surveillance Sharepoint website (http://def.sharepoint.doh.ad.state.fl.us/DEH/Water/well_default.aspx).

1.1 Click on the 'Laserfiche' document library on the Quick launch area to the left on the screen.

1.2 Right click on the 'Signature_template' link and select 'Save Target As'. Select a location on your computer for saving a copy of the 'Signature_Template' image file.

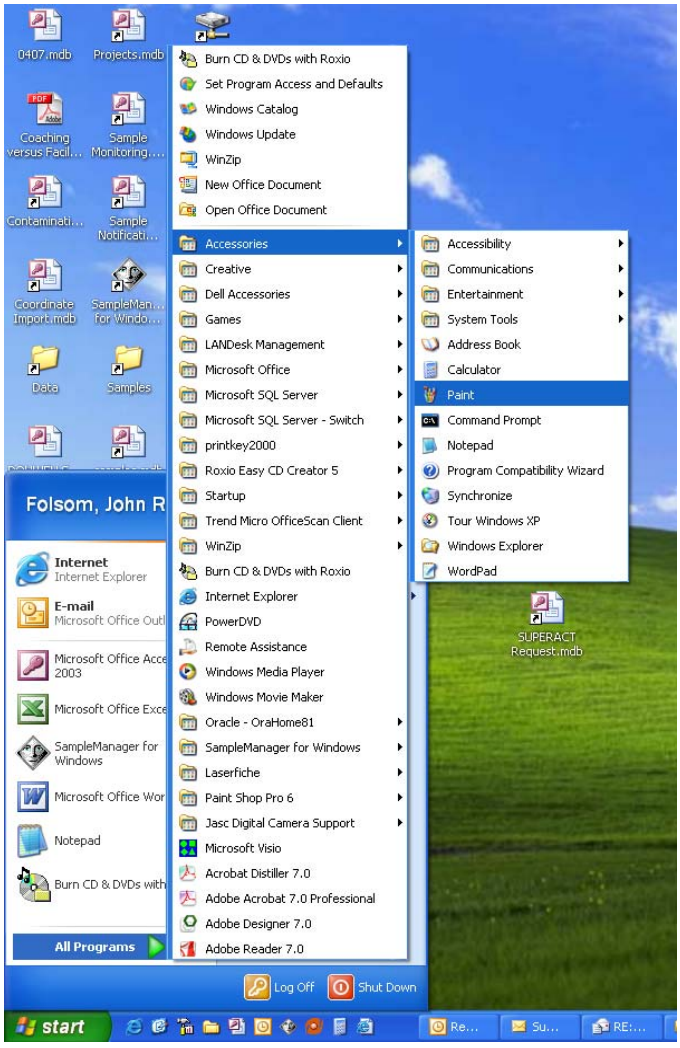
2 **Open Windows Paint program**

2.1 Click START

2.2 Click ALL PROGRAMS

2.3 Click ACCESSORIES

2.4 Click PAINT

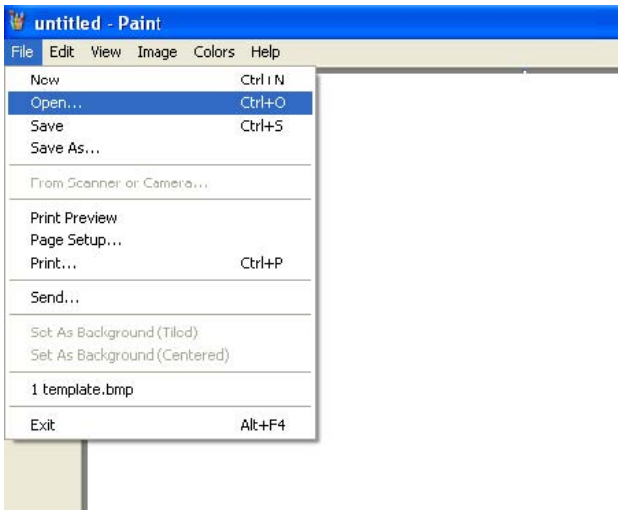


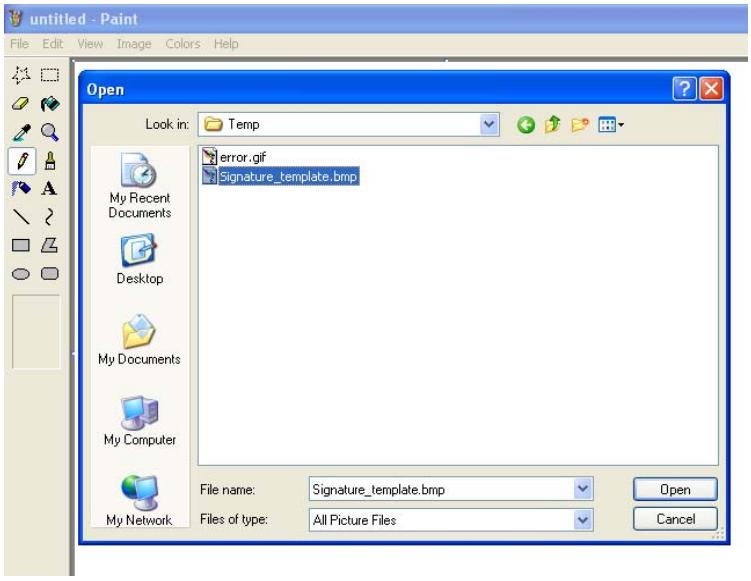
3 **Open the SIGNATURE_TEMPLATE.bmp file**

3.1 From within the PAINT program, Click FILE

3.2 Click Open.

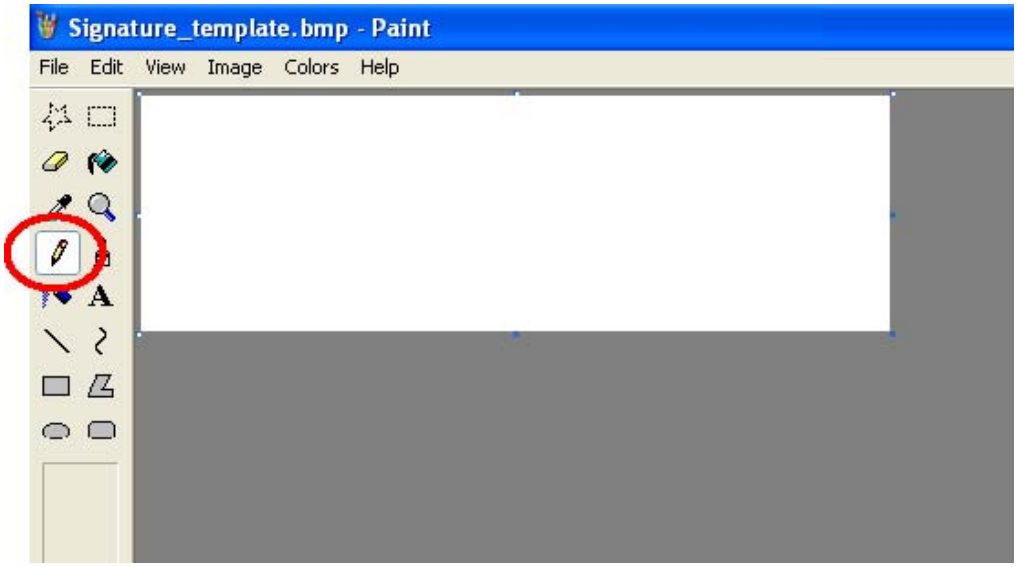
3.3 In the browse OPEN browse window, navigate to the location of the SIGNATURE_TEMPLATE.bmp. Select the SIGNATURE_TEMPLATE.bmp and click OPEN.



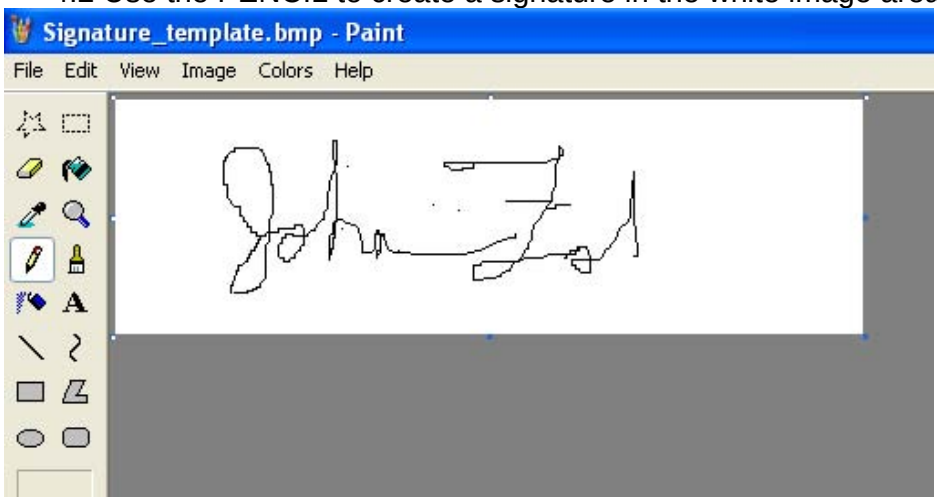


4. **Draw signature**

4.1 Click the PENCIL toolbar button.

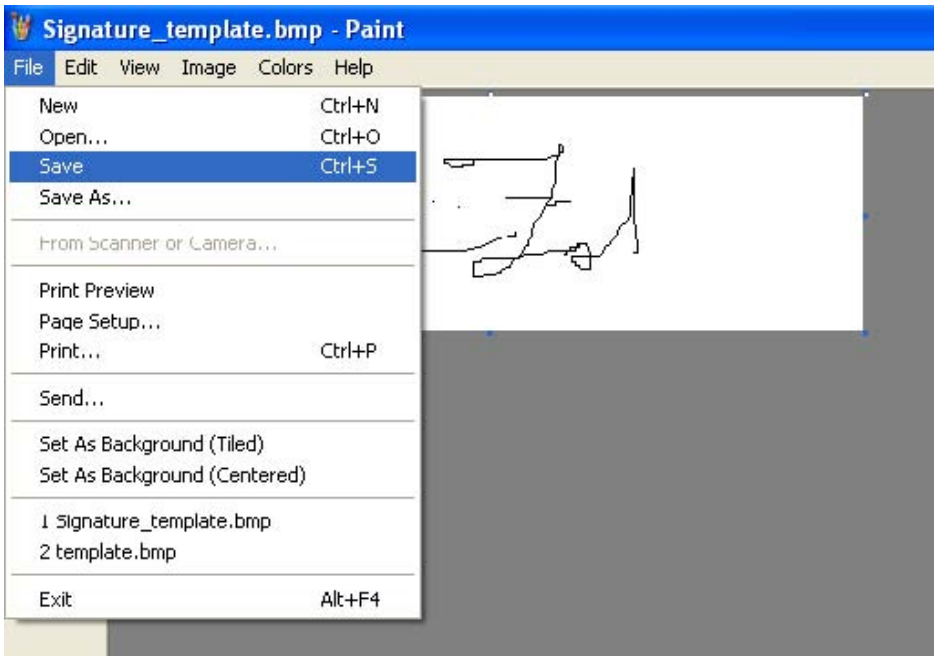


4.2 Use the PENCIL to create a signature in the white image area



4.3 Click FILE

4.4 Click SAVE.



4.5 Click FILE.

4.6 Click EXIT

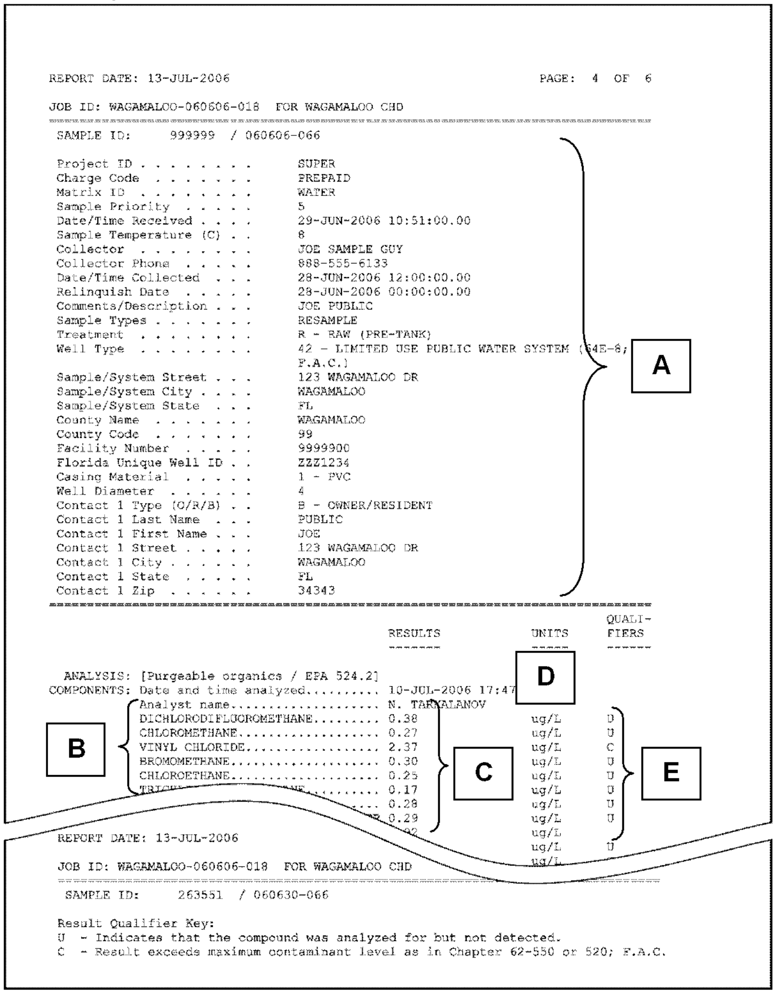
5. **Add your signature to Laserfiche**

See the instructions in the Laserfiche Web Access manual or the online training section.

APPENDIX D
How to Read the Lab Report

HOW TO READ THE LAB REPORT

Below is an example of a Laboratory Report that should look similar to the one you received. The number of chemicals on this example have been shortened for simplicity. Your report will include all the chemicals that were screened in your water sample.



REPORT DATE: 13-JUL-2006 PAGE: 4 OF 6

JOB ID: WAGAMALOO-060606-018 FOR WAGAMALOO CHD

SAMPLE ID: 999999 / 060606-066

Project ID	SUPER
Charge Code	PREPAID
Matrix ID	WATER
Sample Priority	5
Date/Time Received	29-JUN-2006 10:51:00.00
Sample Temperature (C) . .	8
Collector	JOE SAMPLE GUY
Collector Phone	888-555-6133
Date/Time Collected . . .	28-JUN-2006 12:00:00.00
Relinquish Date	28-JUN-2006 00:00:00.00
Comments/Description . . .	JOE PUBLIC
Sample Types	RESAMPLE
Treatment	R - RAW (PRE-TANK)
Well Type	42 - LIMITED USE PUBLIC WATER SYSTEM (64E-8; F.A.C.)
Sample/System Street . . .	123 WAGAMALOO DR
Sample/System City	WAGAMALOO
Sample/System State . . .	FL
County Name	WAGAMALOO
County Code	99
Facility Number	9999900
Florida Unique Well ID . .	ZZZ1234
Casing Material	1 - PVC
Well Diameter	4
Contact 1 Type (O/R/B) . .	B - OWNER/RESIDENT
Contact 1 Last Name . . .	PUBLIC
Contact 1 First Name . . .	JOE
Contact 1 Street	123 WAGAMALOO DR
Contact 1 City	WAGAMALOO
Contact 1 State	FL
Contact 1 Zip	34343

ANALYSIS: [Purgeable organics / EPA 524.2]

COMPONENTS	RESULTS	UNITS	QUALIFIERS
Date and time analyzed.........	10-JUL-2006 17:47		
Analyst name....................	N. TARKALANOV		
DICHLORODIFLUOROMETHANE.........	0.38	ug/L	U
CHLOROMETHANE...................	0.27	ug/L	U
VINYL CHLORIDE..................	2.37	ug/L	C
BROMOMETHANE....................	0.30	ug/L	U
CHLOROETHANE....................	0.25	ug/L	U
TRICH...	0.17	ug/L	U
...	0.28	ug/L	U
...	0.29	ug/L	U

REPORT DATE: 13-JUL-2006

JOB ID: WAGAMALOO-060606-018 FOR WAGAMALOO CHD

SAMPLE ID: 263551 / 060630-066

Result Qualifier Key:
U - Indicates that the compound was analyzed for but not detected.
C - Result exceeds maximum contaminant level as in Chapter 62-550 or 520; F.A.C.

A. SAMPLE INFORMATION
This is basic information on who, what, and where about the sample. SAMPLE ID -This unique number is used by the laboratory to track and record the analysis results from the water sample collected from your well. If you find a mistake in your data or if you have a question, please contact your County Health Department.

B. CHEMICALS ANALYZED
This is the list of chemicals that the lab looked for in your water sample.

C. RESULTS
This is the chemical concentration detected in the sample. If the chemical was not detected in the sample, this number is the Method Detection Limit (MDL).

D. UNITS
This is the unit of measurement of the chemical concentration. Typically, these are measured in ug/L which equals parts per billion.

E. QUALIFIERS
This is a one or two-letter code that provides additional information about the result. A qualifier usually indicates precision, accuracy or defined allowable levels of the detected chemical. Each qualifier used in your report is defined at the end of the report. A blank in this column indicates the chemical was detected, but is below the MCL or HAL.

COMMON DEFINITIONS
ug – microgram. *1/1,000,000 of a gram.*
L – Liter
MCL – Maximum Contaminant Level. *The established safe concentration used by Public Water Systems. Typically based upon an average adult drinking 2 L of water per day for a 70 year life span.*
HAL –Health Advisory Level. *Florida recommended health limit for the given chemical. Either there is no Federal standard or the HAL is more stringent.*
MDL – Method Detection Limit. *The lowest concentration of a chemical that the laboratory equipment can accurately quantify.*

PARTIAL LIST OF LABORATORY QUALIFIERS
U – Indicates that the chemical was analyzed for but not detected. A value associated with this qualifier means this is the laboratory's method detection limit (MDL).
E – Chemical not detected; quality control out of range; result is the MDL.
C – Result exceeds the maximum contaminant level (MCL) for this chemical.
HA – Result exceeds the Florida recommended Health Advisory Level (HAL)
I – Approximate result between MDL and practical quantification limit. *(This means the lab is reasonably sure that the chemical was in the water sample, but the concentration is so low that they are not confident that the concentration that they are reporting is correct.)*
J3 – The reported value failed to meet the established criteria, for example, if the sample came to the lab at a higher temperature than allowed by quality assurance protocol.

APPENDIX E
Water Fact Sheets

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of 1,1-dichloroethene typically found in private drinking water wells.

1,1-Dichloroethene (1,1-DCE)

What is 1,1-dichloroethene?

1,1-dichloroethene (1,1-DCE) is a synthetic liquid. It is sometimes referred to as 1,1-dichloroethylene. 1,1-DCE has a mild, sweet smell similar to chloroform. Nearly all of it is used to make solvents/degreasers, adhesives, produce synthetic fibers, refrigerants, food packaging, and coating resins.

About 90,700 tons per year of 1,1-DCE were produced in the USA during the early 1980s. 1,1-DCE may be released by evaporation during production or in wastewater. It can also be released when used to make plastic wrap, adhesives, and synthetic fiber. It may also exist in groundwater as the result of the breakdown of other similar chemicals.

How might I be exposed to 1,1-dichloroethene in my drinking water?

- Usually found in ground water as breakdown product of closely related chemicals.
- Drinking water may contain 1,1-DCE as a result of improper disposal of wastes.

What is the standard for 1,1-dichloroethene in drinking water?

The Florida Department of Environmental Protection's drinking water standard for 1,1-DCE is 7 micrograms per liter (7 ug/L). There is no required sampling of private drinking water wells.

How can 1,1-dichloroethene affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the drinking standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?

- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Drinking water with levels of 1,1-dichloroethene well above the drinking water standard for extended periods increases the risk of liver and kidney damage.

How likely is 1,1-dichloroethene to cause cancer?

The ability of 1,1-dichloroethene to cause cancer in humans is unknown. The International Agency for Research on Cancer has determined that 1,1-dichloroethene is not classifiable as to its ability to cause cancer in humans. The U.S. Environmental Protection Agency has determined that 1,1-dichloroethene could possibly cause cancer in humans. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if I have been exposed to 1,1-dichloroethene?

1,1-DCE can be detected in the breath, urine, blood, and body tissues. Breath tests are now the most common way to tell whether a person has been recently exposed to it. These tests require specialized equipment and are not available at all doctor offices. Your physician can tell you where these tests can be done.

Tests may be used to assess damage to systems including the lung, liver and kidney function. However, the tests cannot pinpoint the cause of the damage. Seek medical advice if you have any symptoms that you think may be related to chemical exposure

Should I continue to use my drinking water if 1,1-dichloroethene is found?

Levels of 1,1-dichloroethene less than the drinking water standard of 7 ug/L are not likely to cause illness. Drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to 1,1-dichloroethene in different situations and at higher levels than those usually found in drinking water wells: Please see the U.S. EPA Consumer Fact Sheet for 1,1-dichloroethene at: http://www.epa.gov/safewater/contaminants/dw_contamfs/11-dichl.html

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of 1,2-Dichloropropane typically found in private drinking water wells.

1,2-Dichloropropane

What is 1,2-dichloropropane?

1,2-Dichloropropane is a colorless, flammable liquid. It smells like chloroform. It is somewhat soluble in water. It is used as a solvent and pesticide.

Production in the United States has gone down over the past 20 years. Most uses have been discontinued. Today, almost all of it is used in making tetrachloroethylene and several other related chlorinated chemicals.

How might I be exposed to 1,2-dichloropropane in my drinking water?

- Run-off into surface water.
- Leach into ground water
- Get into drinking water when waste is not properly disposed.

Most people are not likely to be exposed to this chemical since it is no longer used very much. However, people who live near a waste site containing 1,2-dichloropropane could be exposed by drinking contaminated groundwater.

What is the standard for 1,2-dichloropropane in drinking water?

The Florida Department of Environmental Protection's drinking water standard for 1,2-Dichloropropane is 5 micrograms per liter (5 ug/L. There is no required sampling of private drinking water wells.

How can 1,2-dichloropropane affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standard hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?

- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals exposed to arsenic. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Little information is available concerning likely health effects from drinking water with the low levels of 1,2 dichloropropane typically found in ground water near contaminated sites.

How likely is 1,2-dichloropropane to cause cancer?

The ability of 1,2-dichloropropane to cause cancer in humans is unknown. 1,2-dichloropropane causes cancer in some animal experiments. Based on this information, the U.S. Environmental Protection Agency has classified it as a probable human carcinogen. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if you have been exposed to 1,2-dichloropropane?

Urine and blood tests can be used to find out if you have been exposed to it. These tests cannot predict whether you will suffer harmful effects. Because special equipment is needed, these tests are not usually done in a doctor's office.

Should you continue to use your drinking water if 1,2-dichloropropane is found?

Levels of 1,2-dichloropropane less than the drinking water standard are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to 1,2-dichloropropane in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for 1,2-dichloropropane at: http://www.atsdr.cdc.gov/tfacts134.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of arsenic typically found in private drinking water wells.

Arsenic

What is arsenic?

Arsenic is a naturally occurring metal. It is in rocks and soil, water, and air. Arsenic is also in plants and animals. There are trace amounts of it in all living matter.

Nearly 90% of man-made arsenic in the U.S. is used to preserve wood. It is used as a pesticide. Arsenic is also used to make paints, dyes, metals, drugs, soaps, and semi-conductors.

Arsenic deposited on the ground from industrial or agricultural uses tends to stay in the top few feet of soil for a long time. When dissolved in water, arsenic has no smell, taste, or color. This is true even at high levels.

How might I be exposed to arsenic in my drinking water?

- Water that seeps through the rock dissolves some arsenic and carries it into aquifers, under the ground, where water is stored. These aquifers may be used for drinking water.
- Drinking water may contain arsenic as a result of proper or improper use or disposal of wastes.

What is the standard for arsenic in drinking water?

The Florida Department of Environmental Protection drinking water standard for arsenic is 10 micrograms per liter (10 ug/L). There is no required sampling of private drinking water wells.

How can arsenic affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Health effects from exposure to arsenic in drinking water typically take years to develop. At low levels, darkening of the skin (hyperpigmentation) may take years to develop.

Too much direct sunlight and cigarette smoking may worsen the effects of arsenic exposure. Apart from arsenic, stopping smoking and reducing excess sun exposure reduces the risk of many diseases.

How likely is arsenic to cause cancer?

The World Health Organization, the U.S. Department of Health and Human Services, and the U.S. Environmental Protection Agency have all determined exposure to inorganic arsenic increases the risk of cancer in humans. These include cancers of the lung, skin, bladder, liver, kidney, and prostate. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if you have been exposed to arsenic?

There are tests to measure the level of arsenic in blood, urine, hair, or fingernails. The urine test is the most reliable test for arsenic exposure within the last few days. Tests on hair and fingernails can measure exposure to high levels or arsenic over the past 6-12 months. These tests can determine if you have been exposed to above-average levels of arsenic. They cannot predict how the arsenic levels in your body will affect your health.

Should you continue to use your drinking water if arsenic is found?

Levels of arsenic less than the drinking water standard are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to arsenic in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for arsenic at: http://www.atsdr.cdc.gov/tfacts2.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of benzene typically found in private drinking water wells.

Benzene

What is benzene?

Benzene is a colorless liquid. It has a sweet odor. Benzene evaporates quickly into the air. In water, it dissolves slightly. It is highly flammable. Benzene occurs in nature. It is also formed through human activities.

Benzene is widely used in the United States. In fact, it ranks in the top 20 chemicals for the volume produced. Some industries use benzene to make other chemicals. In turn, these are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, and dyes. Detergents, drugs, and pesticides are also made with benzene. Natural sources include volcanoes and forest fires. It is also a natural part of crude oil, gasoline, and cigarette smoke.

How might I be exposed to benzene in my drinking water?

- Gasoline spills and leakage from underground gasoline storage tanks or from hazardous waste sites containing benzene can result in contamination of well water.

What is the standard for benzene in drinking water?

The Florida Department of Environmental Protection's drinking water standard for benzene is 1 microgram per liter (1 ug/L). There is no required sampling of private drinking water wells.

How can benzene affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Drinking water with levels of benzene well above the drinking water standard for an extended period of time increases the risk of affecting the blood. Benzene can affect the bone marrow that makes blood cells. It can cause a decrease in red blood cells. This can lead to anemia. It can also cause excessive bleeding. In some cases, benzene can affect the immune system. That can increase the chance of infection.

How likely is benzene to cause cancer?

The US Department of Health and Human Services has determined that benzene is a known human carcinogen. Long-term exposure to high levels of benzene can cause leukemia. Leukemia is cancer of the blood-forming white blood cells. The drinking water standard is set to protect against the risk of leukemia.

Is there a medical test to see if you have been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is a test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood. However, since benzene disappears rapidly from the blood, measurements are accurate only for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. However, this test must be done shortly after exposure and is not a reliable way to determine how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Should you continue to use your drinking water if benzene is found?

Levels of benzene less than the drinking water standard are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to this chemical in different situations and at higher levels than those usually found in drinking water wells, please see the ATSDR ToxFAQs for benzene at: www.atsdr.cdc.gov/tfacts3.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of di(2-ethylhexyl) phthalate (DEHP) typically found in private drinking water wells.

Di(2-ethylhexyl) phthalate (DEHP)

What is DEHP?

Di(2-ethylhexyl) phthalate (DEHP) is a colorless liquid with almost no odor. It is also sometimes known as bis(2-ethylhexyl) phthalate. DEHP is commonly added to plastics to make them flexible.

How might I be exposed to DEHP in my drinking water?

- Drinking water from a contaminated well
- Living near uncontrolled hazardous waste sites containing DEHP products

What is the standard for DEHP in drinking water?

The Florida Department of Environmental Protection drinking water standard for DEHP is 6 micrograms per liter of water (6 ug/L). There is no required sampling of private drinking water wells.

How can DEHP affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of DEHP increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals exposed to a chemical. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?

- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Drinking water with levels of DEHP well above the drinking water standard for extended periods increases the risk of damage to the liver and testes.

How likely is DEHP to cause cancer?

The ability of DEHP to cause cancer in humans is unknown. The U.S. Department of Health and Human Services has determined that DEHP may reasonably be anticipated to cause cancer. The U.S. Environmental Protection Agency has determined that DEHP probably causes cancer. These determinations were based entirely on liver cancer in rats and mice. The International Agency for Research on Cancer has stated that DHEP cannot be classified as to its ability to cause cancer. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if I have been exposed to DEHP?

There is a test available that measures a breakdown product of DEHP called mono(2-ethylhexyl) phthalate (MEHP) in your urine or blood. The test can only detect recent exposure because DEHP is rapidly broken down and eliminated from your body. This test is not routinely available at the doctor's office because it requires special equipment.

Should I continue to use my drinking water if DEHP is found?

Levels of DEHP less than the drinking water standard of 6 ug/L are not likely to cause illness. Drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to DEHP in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for DEHP at www.atsdr.cdc.gov/tfacts9.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of dibromo-3-chloropropane (DBCP) typically found in private drinking water wells.

Dibromo-3-chloropropane (DBCP)

What is dibromo-3-chloropropane?

Dibromo-3-chloropropane (DBCP) is a colorless synthetic liquid with a sharp smell. It can be tasted in water at very low concentrations.

Until 1979, farmers used DBCP to kill pests that harmed crops. DBCP is used to make fire retardant .

DBCP is also known as 1,2-dibromo-3-chloropropane.

How might I be exposed to dibromo-3-chloropropane in my drinking water?

- Drinking water from a contaminated well
- Breathing air contaminated with DBCP
- Living near uncontrolled hazardous waste sites containing DBCP products

What is the standard for dibromo-3-chloropropane in drinking water?

The Florida Department of Environmental Protection's drinking water standard for DBCP is 0.2 micrograms per liter of water (0.2 ug/L). There is no required sampling of private drinking water wells.

How can dibromo-3-chloropropane affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of DBCP increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Drinking water with levels of DBCP well above the drinking water standard for an extended period increases the risk of low fertility and kidney damage.

How likely is dibromo-3-chloropropane to cause cancer?

The ability of DBCP to cause cancer in humans is unknown. The US Department of Health and Human Services has determined that DBCP may reasonably be anticipated to cause cancer. In animal studies DBCP caused stomach and kidney cancer. The ability of DBCP to cause these same cancers in humans is unknown. The drinking water standards is set to protect against cancer.

Is there a medical test to see if I have been exposed to dibromo-3-chloropropane?

Tests are available that measure the amount of DBCP in exhaled air, blood, and samples of tissues from the body. These tests may require special equipment and they may not be available in your doctor's office.

Should I continue to use my drinking water if dibromo-3-chloropropane is found?

Levels of DBCP less than the drinking water standard of 0.2 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to DBCP in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for dibromo-3-chloropropane at www.atsdr.cdc.gov/tfacts36.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of dieldrin typically found in private drinking water wells.

Dieldrin

What is Dieldrin?

Dieldrin is a synthetic chemical used to kill insects. It has a chemical structure similar to aldrin. Aldrin quickly breaks down to dieldrin. Pure aldrin and dieldrin are white powders with a mild chemical odor. The less pure commercial powders have a tan color.

From the 1950s until 1970, dieldrin was used widely on corn and cotton. Because of concerns about damage to the environment and potentially to human health, the U.S. Environmental Protection Agency (EPA) banned all uses of aldrin and dieldrin in 1974, except to control termites. In 1987, the U.S. EPA banned all uses.

How might I be exposed to dieldrin in my drinking water?

- It is everywhere in the environment, but at very low levels.
- In drinking water, it breaks down very slowly.

What is the standard for dieldrin in drinking water?

The Florida Department of Health drinking water guideline for dieldrin is 0.002 micrograms per liter (0.002 ug/L). There is no required sampling of private drinking water wells.

How can dieldrin affect my health?

Drinking water guidelines are set at very low levels. Drinking water every day at or below the guideline for your entire lifetime is unlikely to cause illness.

To set drinking water guidelines, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water guidelines hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the guideline for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The guideline is set to protect the most sensitive. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Little information is available about what kind of health risks are likely from drinking water with low levels of dieldrin. More is known about what health effects might occur if someone is exposed at higher levels in a different way, such as applying pesticides.

How likely is dieldrin to cause cancer?

The ability of dieldrin to cause cancer in humans is unknown. Dieldrin does cause liver cancer in mice. The International Agency for Research on Cancer has determined dieldrin is not classifiable as to human carcinogenicity. The U.S. EPA has determined that dieldrin is a probable human carcinogen. The drinking water guideline is set to protect against the risk of cancer.

Is there a medical test to see if you have been exposed to dieldrin?

There are laboratory tests that can measure dieldrin in your blood, urine, and body tissues. Dieldrin stays in the body for months. The tests cannot tell you whether harmful health effects will occur. These tests are not routinely available at the doctor's office because they require special equipment.

Should you continue to use your drinking water if dieldrin is found?

Levels of dieldrin less than the drinking water guideline are not likely to cause illness. Drinking water with levels slightly about the drinking water guideline for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water guideline.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to dieldrin in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for aldrin/dieldrin at http://www.atsdr.cdc.gov/tfacts1.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of ethylene dibromide (EDB) typically found in private drinking water wells.

Ethylene dibromide (EDB)

What is ethylene dibromide?

Ethylene dibromide (EDB) is a colorless, heavy organic liquid with a mildly sweet chloroform-like odor. It is also known as 1,2-dibromoethane. Trade names include Bromofume and Dowfume.

Farmers used it to kill nematodes (worms) in soil around citrus, peanuts, and cotton plants. EDB was also used in anti-knock gasoline mixtures, particularly in aviation fuel. Other uses include as a solvent for resins, gums, and waxes; in waterproofing preparations; and in making dyes and drugs.

How might I be exposed to ethylene dibromide?

- Drinking contaminated well water
- Breathing vapors from contaminated water
- Bathing with contaminated water

What is the standard for ethylene dibromide in drinking water?

The Florida Department of Environmental Protection's drinking water standard for EDB is 0.02 micrograms per liter (0.02 ug/L). There is no required sampling of private drinking water wells.

How can ethylene dibromide affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?

- How often did the exposure occur"
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

Health effects are also determined by a number of personal factors:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

EDB is rarely found in private drinking water wells and then usually at very low levels. Drinking water with levels of EDB well above the drinking water standard for an extend period may increase the risk of birth defects.

How likely is ethylene dibromide to cause cancer?

The ability of EDB to cause cancer in humans is unknown. In rats and mice, EDB causes skin, lung, nose, stomach and liver cancer. The International Agency for Research on Cancer has determined there is inadequate evidence that EDB causes cancer in humans but sufficient evidence that it causes cancer in animals. The U.S. Environmental Protection Agency has determined that EDB is a probably human carcinogen. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if I have been exposed to ethylene dibromide?

If you suspect you have been exposed to high levels of EDB, your doctor can do a medical exam and test liver, kidney, nerve and reproductive system functions. These tests indicate whether damage has occurred but may not tell what caused the damage.

Should I continue to use my drinking water if ethylene dibromide is found?

Levels of EDB less than the drinking water standard of 0.02 ug/L are not likely to cause illness. Drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to EDB in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for EDB at http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=725&tid=131

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of iron typically found in private drinking water wells.

Iron

What is iron?

Iron is a naturally occurring metal and one of the earth's most plentiful chemicals. It makes up at least five percent of the earth's crust. Rainfall seeping through the soil dissolves iron in the earth's surface. From there, rain carries the iron into almost every kind of natural water supply. This includes private drinking water wells. Although iron occurs naturally in ground water, it is rarely at concentrations greater than 10,000 micrograms per liter (ug/L).

Iron exists in a number of forms in water. Water with high iron levels can form reddish brown particles that settle to the bottom of a glass of water. When iron combines with tea, coffee and other beverages, it can produce an inky, black appearance and a harsh, unacceptable taste. Vegetables cooked in water containing excessive iron turn dark and look unappealing.

Concentrations of iron as low as 300 ug/L can leave reddish brown stains on plumbing fixtures, tableware and laundry that can be very hard to remove. When these deposits break loose from water piping, rusty water will flow through the faucet.

Finally, excess iron may cause the growth of iron bacteria. Iron bacteria leave a reddish brown or yellow slime that can clog plumbing. The slime can also cause an offensive odor. You may notice this slime or sludge in your toilet tank.

How might I be exposed to iron in my drinking water?

- Iron occurs naturally in groundwater.

What is the standard for iron in drinking water?

The Florida Department of Environmental Protection drinking water standard for iron is 300 micrograms per liter (300 ug/L). This secondary drinking water standard is based on taste and appearance rather than on any harmful health effect. No adverse health effects are generally associated with iron in drinking water. At higher levels, iron can cause changes in the look, smell, and color of the water. Too much iron can cause a rusty color, sediment, metallic taste, and reddish or orange staining. There is no required sampling of private drinking water wells.

How can iron affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times

less than the "no-effect level." Therefore, drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Iron is not hazardous to health, but can cause taste and appearance problems. Essential for good health, iron helps transport oxygen in the blood. Most tap water in the United States supplies approximately 5 percent of the dietary requirement for iron. No adverse health effects are generally associated with drinking water with iron. At considerably higher concentrations, iron causes taste, odor, and staining problems.

The amount of iron in water is usually low, and the chemical form of the iron found in water is not readily absorbed by the body. Iron bacteria, that may be associated with iron in water, are not a health problem.

How likely is iron to cause cancer?

Iron is not known to cause cancer in people.

Is there a medical test to see if I have been exposed to iron?

There is a simple blood test your doctor can do to see what the levels of iron are in your blood.

Should I continue to use my drinking water if iron is found?

You can continue to use your water without health concerns. Iron in drinking water is not likely to cause illness. Excess iron can, however, can give water a metallic taste and stain clothes, sinks, and tubs.

Because taste and staining problems increase as the iron level increases, you should seek drinking water that meets the standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about iron: Please see the U.S. Environmental Protection Agency's Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals at http://www.epa.gov/safewater/consumer/2ndstandards.html

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of lead typically found in private drinking water wells.

Lead

What is lead?

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of the environment. Much if it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead is used in the production of batteries, ammunition, metal products and devices to shield X-rays.

How might I be exposed to lead in my drinking water?

- Drinking water that contains lead
- Having a home with lead pipes or lead solder

What is the standard for lead in drinking water?

The Florida Department of Environmental Protection's drinking water standard for lead is 15 micrograms per liter of water (15 ug/L). There is no required sampling of private drinking water wells.

How can lead affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water standard hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of lead increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?

- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Drinking water with levels of lead well over the drinking water standard over an extended period of time can cause illness. Too much lead can damage your brain, kidneys, nervous system, and red blood cells. Young children and pregnant women are at greatest risk.

How likely is lead to cause cancer?

The ability of lead to cause cancer in humans is unknown. Based on animal studies, the U.S. Department of Health and Human Services has determined that lead acetate and lead phosphate may reasonably be anticipated to cause cancer in humans. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if I have been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth and bones can be measured with X-rays, but this test is not as readily available. Medical treatment may be necessary in children if the lead concentration in blood is higher than 45 micrograms per deciliter (45 ug/dL). No blood lead threshold for adverse health effects has been identified in children.

Should I continue to use my drinking water if lead is found?

Levels of lead less than the drinking water standard of 15 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to lead in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for lead at www.atsdr.cdc.gov/tfacts13.pdf

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of manganese typically found in private drinking water wells.

Manganese

What is manganese?

Manganese is a naturally occurring metal. It is found in many types of rocks. Pesticides, such as maneb or mancozeb also contain manganese. Methylcyclopentadienyl manganese tricarbonyl (MMT) is a fuel additive in some gasolines.

Manganese is an essential trace element and is necessary for good health. Manganese is in foods, like grains and cereals. It is found in high amounts in other foods like tea. A small amount of manganese in the diet is necessary for good health.

How might I be exposed to manganese in my drinking water?

- Natural deposits
- Disposal of wastes
- Deposits from airborne sources.

What is the standard for manganese in drinking water?

The Florida Department of Environmental Protection drinking water standard for manganese is 50 micrograms per liter (50 ug/L). This secondary drinking water standard is based on taste and appearance rather than on any harmful health effect. No adverse health effects are generally associated with manganese in drinking water. At higher levels, there may be a change in the look, smell, or color of the water. There is no required sampling of private drinking water wells.

How can manganese affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Daily intake of small amounts of manganese is needed for growth and good health in children. It is constantly present in the mother and is available to the developing fetus during pregnancy. Manganese is also transferred from a nursing mother to her infant in breast milk at levels that are appropriate for proper development.

In rare cases, some people lose the ability to remove excess manganese from their bodies. In these cases, they develop nervous system problems from manganese exposure.

How likely is manganese to cause cancer?

The U.S. Environmental Protection Agency has determined that manganese is not classifiable as to human carcinogenicity.

Is there a medical test to see if I have been exposed to manganese?

Tests are available that show levels of manganese in different body fluids. Levels of manganese in blood, urine, feces, and scalp hair can be used to determine exposure to excess levels of manganese by testing whether levels of the metal in your body tissues are greater than normal. However, these tests cannot predict how the levels in your tissues will affect your health. Your doctor can take samples and send them to a testing laboratory.

Should I continue to use my drinking water if manganese is found?

You can continue to use your water without health concerns. Manganese in drinking water is not likely to cause illness. Excess manganese can, however, can cause taste and staining problems.

Because taste and staining problems increase as the manganese level increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to manganese in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for manganese at http://www.atsdr.cdc.gov/tfacts151.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of methyl tert-butyl ether typically found in private drinking water wells.

Methyl *tert*-butyl ether (MTBE)

What is methyl *tert*-butyl ether?

Methyl *tert*-butyl ether is a synthetic flammable liquid with a distinctive, disagreeable odor. It has been added to unleaded gasoline since the 1980s to help the gasoline burn more efficiently.

How might I be exposed to methyl *tert*-butyl ether in my drinking water?

- Drinking contaminated well water
- Living near uncontrolled hazardous waste sites containing MTBE products
- Breathing air in the home which has been contaminated by MTBE ether vapors from use of hot water (showers, dishwashers, etc.)

What is the standard for methyl *tert*-butyl ether in drinking water?

The Florida Department of Health's drinking water guideline for MTBE is 35 micrograms per liter of water (35 ug/L). There is no required sampling of private drinking water wells.

How can methyl *tert*-butyl ether affect my health?

To protect health, drinking water guidelines are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water guidelines, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water guidelines hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the drinking water guideline for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of methyl *tert*-butyl ether increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water guideline is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?

- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

There is little information on the effects in people drinking water contaminated with MTBE. Studies with rats and mice suggest that drinking water contaminated with MTBE may cause gastrointestinal irritation, liver and kidney damage, and nervous system effects.

How likely is methyl *tert*-butyl ether to cause cancer?

The U.S. Department of Health and Human Services, the International Agency for Research on Cancer, and the U.S. Environmental Protection Agency have not classified MTBE as to its ability to cause cancer.

Is there a medical test to see if I have been exposed to methyl *tert*-butyl ether?

MTBE can be detected in exhaled air, blood and urine for up to 1 or 2 days after exposure. These tests are not available at most doctors' offices, but can be done at special laboratories that have the right equipment. There is no other test specific to determining MTBE exposure.

Should I continue to use my drinking water if methyl *tert*-butyl ether is found?

Levels of MTBE less than the drinking water standard of 35 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water guideline for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the guideline.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to methyl *tert*-butyl ether in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for MTBE at www.atsdr.cdc.gov/tfacts91.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of nitrates typically found in private drinking water wells.

Nitrates

What are nitrates?

Nitrates are chemicals found in nature. Bacteria in soil change nitrogen into nitrates. Nitrogen comes from plants, fertilizer, and animal or human waste. Nitrates are commonly found in drinking water at low levels; less than three thousand micrograms per liter (3,000 ug/L). Nitrates cannot be seen or tasted. Therefore, good tasting water might contain nitrates.

How might I be exposed to nitrates in my drinking water?

- Drinking contaminated well water is the most likely way for someone to be exposed to nitrates.

What are the current guidelines for nitrates in drinking water?

The Florida Department of Environmental Protection drinking water standard for nitrates is 10 thousand micrograms per liter (10,000 ug/L). There is no required sampling of private drinking water wells. However, private well owners are encouraged to test their well for nitrates on a regular basis.

How can nitrates affect my health?

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur"
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Nitrates can affect red blood cells. It can reduce the cells' ability to carry oxygen to the body. In most cases, for adults and children affected blood cells quickly go back to normal. However, the blood cells of infants younger than six months can take much longer to do so. As a result, infants who are given water with more than 10,000 ug/L nitrates may develop a serious health condition due to the lack of oxygen. This is also true of infant formula or

foods made with water with more than 10,000 ug/L nitrates. This condition is called **methemoglobinemia**. Many people call it "blue baby syndrome" since low oxygen in the blood causes babies to have blue-colored skin. Some studies show that diarrhea can make this problem even worse.

An infant with moderate to serious "blue baby syndrome" may have a brownish-blue color due to the lack of oxygen. This condition may be hard to detect in infants with dark skin. In mild to moderate cases, babies may have the same symptoms as when they have a cold or another infection. They may act fussy, tired, have diarrhea, or vomit. While there is a simple blood test to see if an infant has "blue baby syndrome," doctors may not think to do this test for babies with mild to moderate symptoms. Many other common illnesses cause the same symptoms.

If your baby has a brownish-blue color, bring your baby to a hospital immediately. There is a medication (methylene blue) that will quickly make your baby's blood go back to normal.

Nitrates have been found in breast milk, also. However, there are no confirmed reports of "blue baby syndrome" being caused by a nursing mother who drank well water high in nitrates.

Some people have conditions that make them more likely to have health problems from nitrates. This includes:

- People who don't have enough stomach acids.
- People with an inherited lack of the enzyme that converts affected red blood cells back to normal (this is called methemoglobin reductase).

How likely are nitrates to cause cancer?

Nitrates are not known to cause cancer.

Is there a medical test to see if I have been exposed to nitrates?

While there is a simple blood test to see if an infant has "blue baby syndrome," doctors may not think to do this test for babies with mild to moderate symptoms.

Should I continue to use my drinking water if nitrates are found?

The best way to prevent "blue baby syndrome" is not to give your baby water with more than 10,000 ug/L nitrates. Infants under one year of age should not drink water exceeding the drinking water standard of 10,000 ug/L of nitrates. Nitrates in water will not have a long-lasting effect on your baby. If your baby does not have any of the symptoms of "blue baby syndrome" you do not need to bring your baby to the doctor.

Are there any special considerations for nitrates?

Yes, boiling water will kill bacteria that are in well water. Boiling will not, however, reduce the level of nitrates in water. In fact, boiling water with nitrates in it can increase the amount in the water. High levels of nitrates may mean that is likely other contaminants are in your well water. Nitrates in well water from human or animal waste may also have bacteria and viruses. Wells with nitrate contamination from fertilizers may also contain pesticides.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to nitrates in different situations and at higher levels than those usually found in drinking water wells: Please see the U.S. EPA consumer fact sheet for nitrate/nitrite at http://water.epa.gov/drink/contaminants/

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of sodium typically found in private drinking water wells.

Sodium

What is sodium?

Sodium is a naturally occurring metal found in drinking water. Common table salt consists of sodium and chloride. Every water supply contains some level of sodium.

Sodium is an essential nutrient. Most of the sodium we take in is from food. The National Research Council recommends that health adults consume between 500 and 2400 milligrams of sodium per day (mg/day).

Drinking water contributes only a small fraction to a person's overall sodium intake. Limiting the amount of sodium in drinking water, however, helps people who are on a sodium (salt) restricted diet.

How might I be exposed to sodium in my drinking water?

- Sodium occurs naturally in ground water, especially near coastal areas.
- May also be due to man-made contamination. These include: use of road de-icing salts, discharges from water softeners, human or animal waste disposal, and leachate from landfills.

What is the standard for sodium in drinking water?

The Florida Department of Environmental Protection drinking water standard for sodium is 160 milligrams per liter (160 mg/L). This level protects individuals on low sodium (salt) diets. There is no required sampling of private drinking water wells.

When considering the health importance of sodium, the U.S. Environmental Protection Agency (EPA) assumes that water users consume two liters of water per day. EPA recognizes that, on average, 20 percent of a person's daily sodium intake is from drinking water. The rest of an average person's sodium intake is usually from food. Persons on a sodium-restricted diet should evaluate all possible sources of sodium when they are trying to reduce overall intake. It is easier and cheaper to make dietary changes than change the amount of sodium in drinking water.

Very high sodium levels gives water a salty taste and makes it undrinkable.

How can sodium affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time

period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Excess sodium in drinking water is a health risk for those individuals on a sodium-restricted diet. If you are on a sodium-restricted diet, consult a physician or registered dietitian.

To reduce the risks of adverse health effects due to sodium, consult a physician or registered dietitian to plan a healthy diet that reduces the sodium content in your total food intake.

How likely is sodium to cause cancer?

Sodium does not cause cancer.

Is there a medical test to see if you have been exposed to sodium?

Sodium is an important electrolyte that is required for normal body functions. The body has many means of controlling the balance of sodium. Sodium can be measured in either the blood or urine to monitor the levels in the body.

Should you continue to use your drinking water if sodium is found?

Levels of sodium less than the drinking water standard are not likely to cause illness. For those individuals on a sodium-restricted diet, drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to sodium in different situations and at higher levels than those usually found in drinking water wells: Please see the EPA fact sheet on sodium in groundwater at http://water.epa.gov/scitech/drinkingwater/dws/ccl/sodium.cfm

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of tetrachloroethene typically found in private drinking water wells.

Tetrachloroethene

What is tetrachloroethene?

Tetrachloroethene is a synthetic, nonflammable liquid. It evaporates easily into the air and has a sharp, sweet odor. Tetrachloroethene is also know as tetrachloroethylene and perchloroethylene or PCE.

Tetrachloroethene is used in dry cleaning fabrics. It is also used to clean grease from metals. It can also be used to make other chemicals or consumer products.

How might I be exposed to tetrachloroethene in my drinking water?

- Drinking contaminated well water
- Living near uncontrolled hazardous waste sites containing tetrachloroethene products

What is the standard for tetrachloroethene in drinking water?

The Florida Department of Environmental Protection drinking water standard for tetrachloroethene is 3 micrograms per liter of water (3 ug/L). There is no required sampling of private drinking water wells.

How can tetrachloroethene affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of tetrachloroethene increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?

- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

The health effects of drinking water or breathing air with low levels of tetrachloroethene are not well known.

How likely is tetrachloroethene to cause cancer?

It is unknown if tetrachloroethene causes cancer in humans. The US Department of Health and Human Services has determined that tetrachloroethene may reasonably be anticipated to be a carcinogen. Tetrachloroethene has been shown to cause liver tumors in mice and kidney tumors in male rats. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if I have been exposed to tetrachloroethene?

There is a test to measure levels of tetrachloroethene in exhaled air. It is stored in body fat and is slowly released by breathing, so it can be detected for weeks after an exposure to high levels. There is also a blood test for it and trichloroacetic acid, a breakdown product of tetrachloroethene. These tests are simple to perform. These tests are not available in most doctors' offices, but can be performed at special laboratories that have the right equipment.

Should I continue to use my drinking water if tetrachloroethene is found?

Levels of tetrachloroethene less than the drinking water standard of 3 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. However, because the risk of illness increases with how much of a chemical a person is exposed to, how often an exposure occurs and how long the exposure lasts, you should seek drinking water that meets the standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to tetrachloroethene in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for tetrachloroethene at www.atsdr.cdc.gov/tfacts18.pdf

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of thallium) typically found in private drinking water wells.

Thallium

What is thallium?

Pure thallium is a bluish-white metal that is found in trace amounts in the earth's crust. In the past, thallium was obtained as a byproduct from smelting other metals; however, it has not been produced in the United States since 1984. Currently, all the thallium is obtained from imports and from thallium reserves.

In its pure form, thallium is odorless and tasteless. It can be found combined with other substances such as bromine, chlorine, fluorine, and iodine.

Thallium is used mostly in manufacturing electronic devices, switches, and closures, primarily for the semiconductor industry. It also has limited use in the manufacture of special glass and for certain medical procedures. It is a component of cigarette smoke.

How might I be exposed to thallium?

- By living near hazardous waste sites containing thallium that has contaminated well water.
- Eating homegrown fruits and vegetables contaminated with thallium from well water.

What is the standard for thallium in drinking water?

The Florida Department of Environmental Protection drinking water standard for thallium is 2 micrograms per liter (2 ug/L). There is no required sampling of private drinking water wells.

How can thallium affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?

- How long did the exposure last?
- How often did the exposure occur"
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

It is not known what the effects are from ingesting low levels of thallium over a long time. Birth defects were not reported in children of mothers exposed to low levels from eating vegetables and fruits contaminated with thallium.

It is not known if breathing or ingesting thallium affects human reproduction. Studies showed rats that ingested thallium for several weeks had some adverse reproductive effects. Animal data suggest that the male reproductive system may be susceptible to damage by low levels of thallium.

How likely is thallium to cause cancer?

The U.S. Department of Health and Human Service, the International Agency for Research on Cancer, and the U.S. Environmental Protection Agency have not classified thallium as to its human carcinogenicity. No studies are available in people or animals on the carcinogenic effects of breathing, ingesting or touching thallium. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if I have been exposed to thallium?

There are medical tests available to measure levels of thallium in urine and hair. Thallium can also be measured in blood; however, this is not a good indicator of exposure since thallium only stays in blood a very short time. These tests are not routinely available at the doctor's office because they require special equipment. These tests cannot determine if adverse health effects will occur from the exposure to thallium.

Should I continue to use my drinking water if thallium is found?

Levels of thallium less than the drinking water standard of 0.02 ug/L are not likely to cause illness. Drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to thallium in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for thallium at http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=308&tid=49

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of toluene typically found in private drinking water wells.

Toluene

What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. It occurs naturally in crude oil and in the Tolu tree. Making gasoline and other fuels from crude oil produces toluene. So does making coke from coal.

Manufacturers use toluene to make paints, paint thinners, fingernail polish, lacquers, adhesives and rubber. Some printing and leather tanning processes also require toluene.

How might I be exposed to toluene in my drinking water?

- Drinking contaminated well water.
- Living near uncontrolled hazardous waste sites containing toluene products

What is the standard for toluene in drinking water?

The Florida Department of Environmental Protection drinking water standard for toluene is 1,000 micrograms per liter (1,000 ug/L). Concentrations above 40 ug/L can give the water a bad taste or smell. There is no required sampling of private drinking water wells.

How can toluene affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water standard, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water standard hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

At levels well above the drinking water standard, toluene may affect the nervous system causing tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, hearing loss, and color vision loss. These symptoms usually disappear when exposure is stopped.

How likely is toluene to cause cancer?

Studies in humans and animals generally indicate that toluene does not cause cancer.

Is there a medical test to see if I have been exposed to toluene?

There are tests to measure the level of toluene or its breakdown products in exhaled air, urine, and blood. To determine if you have been exposed to it, your urine or blood must be checked within 12 hours of exposure. Several other chemicals are also changed into the same breakdown products as it, so some of these tests are not specific for toluene.

Should I continue to use my drinking water if toluene is found?

Levels of toluene less than the drinking water standard of 1,000 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to toluene in different situations and at higher levels than those usually found in drinking water wells: please see the ATSDR ToxFAQs for toluene at www.atsdr.cdc.gov/tfacts56.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risk from exposure to low levels of trichloroethene typically found in private drinking water wells.

Trichloroethene (TCE)

What is trichloroethene?

Trichloroethene is a synthetic, colorless liquid. It has a somewhat sweet odor and a sweet, burning taste. Trichloroethene is also known as trichloroethylene or TCE.

It is mainly used to remove grease from metal parts. It is also used in making paint and spot removers. It has been found in groundwater and surface water because of its production, use, and disposal.

How might I be exposed to trichloroethene in my drinking water?

- Drinking contaminated well water
- Living near uncontrolled hazardous waste sites containing trichloroethene products
- Breathing air in the home, which has been contaminated by trichloroethene vapors from use of hot water (showers, dishwashers, etc.)

What is the standard for trichloroethene in drinking water?

The Florida Department of Environmental Protection drinking water standard for trichloroethene is 3 micrograms per liter of water (3 ug/L). There is no required sampling of private drinking water wells.

How can trichloroethene affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of trichloroethene increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Drinking water with concentrations of trichloroethene well above the drinking water standard for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women. The extent of some of these effects, however, is not clear. Breathing trichloroethene from the household use of water with concentrations well above the drinking water standard may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

How likely is trichloroethene to cause cancer?

It is unknown if trichloroethene causes cancer in humans. The National Toxicology Program has determined that trichloroethene is anticipated to cause cancer in humans. Some studies on animals suggested that high levels of it caused liver, kidney or lung cancer. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test to see if I have been exposed to trichloroethene?

Several tests can show if you have been exposed to trichloroethene. There is a test for measuring it in the breath; this test must be done shortly after exposure. Blood and urine tests can detect trichloroethene and its breakdown products for up to one week after exposure. However, exposure to similar chemicals can produce the same breakdown products, so the detection is not absolute proof of exposure to trichloroethene.

Should I continue to use my drinking water if trichloroethene is found?

Levels of trichloroethene less than the drinking water standard of 3 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. However, because the risk of illness increases with how much of a chemical a person is exposed to, how often an exposure occurs and how long the exposure lasts, you should seek drinking water that meets the standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to trichloroethene in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for trichloroethene at www.atsdr.cdc.gov/tfacts19.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risk from exposure to low levels of vinyl chloride typically found in private drinking water wells.

Vinyl Chloride

What is vinyl chloride?

Vinyl chloride is a synthetic, colorless gas. It burns easily. It is not stable at high temperatures. Vinyl chloride has a mild, sweet odor. It can be found in ground water from the breakdown of some kinds of solvents. Vinyl chloride is used to make polyvinyl chloride (PVC).

Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride.

How might I be exposed to vinyl chloride in my drinking water?

- It is found in groundwater when disposed of improperly.
- As a liquid, vinyl chloride evaporates easily.

What is the standard for vinyl chloride in drinking water?

The Florida Department of Environmental Protection drinking water standard for vinyl chloride is 1 microgram per liter (1 ug/L). There is no required sampling of private drinking water wells.

How can vinyl chloride affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

How likely is vinyl chloride to cause cancer?

The U.S. Department of Health and Human Services has determined that vinyl chloride is a known carcinogen. Studies in workers who have breathed it over many years showed an increased risk of several kinds of cancer:

- Liver
- Brain
- Lung and
- Some cancers of the blood

The drinking water standard is set to protect against the risk of cancer. Levels of vinyl chloride less than the drinking water standard are not likely to cause cancer. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of cancer. However, because the risk of cancer increases with how much of a chemical a person is exposed to, how often an exposure occurs and how long the exposure lasts, you should seek drinking water that meets the drinking water standard.

Is there a medical test to see if I have been exposed to vinyl chloride?

The results of several tests can sometimes show if you have been exposed to vinyl chloride. Vinyl chloride can be measured in your breath, but the test must be done shortly after exposure. This is not helpful for measuring very low levels of vinyl chloride. The amount of the major breakdown product of vinyl chloride, thiodiglycolic acid, in the urine may give some information about exposure. However, this test must be done shortly after exposure and does not reliably indicate the level of exposure.

Vinyl chloride can bind to genetic material in your body. The amount of this binding can be measured by sampling your blood and other tissues. This measurement will give information about whether you have been exposed to vinyl chloride, but it is not sensitive enough to determine the effects on the genetic material resulting from exposure. These tests are not available at most doctors' offices, but can only be done at special laboratories.

Should I continue to use my drinking water if vinyl chloride is found?

Levels of vinyl chloride less than the drinking water standard are not likely to cause illness. Drinking water with levels slightly above the standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to vinyl chloride in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for vinyl chloride at www.atsdr.cdc.gov/tfacts20.pdf

Florida HEALTH

Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health

This fact sheet discusses possible health risks from exposure to low levels of xylenes typically found in private drinking water wells.

Xylenes

What are xylenes?

Xylenes are a group of three closely related chemicals. Xylenes are a colorless, sweet-smelling, flammable liquid. Xylenes occur naturally in petroleum and coal tar and are formed during forest fires.

Chemical industries produce xylenes from petroleum. They are of the top 30 chemicals produced in terms of volume. Xylenes are used as a cleaning agent, thinner for paint and in paints and varnishes.

How might I be exposed to xylenes in my drinking water?

- Drinking water from a well contaminated with xylenes
- Living near uncontrolled hazardous waste sites containing xylene products
- Breathing air in the home, which has been contaminated by xylene vapors from use of hot water (showers, dishwashers, etc.)

What is the standard for xylenes in drinking water?

The Florida Department of Environmental Protection drinking water standard for xylenes is 10,000 micrograms per liter of water (10,000 ug/L). There is no required sampling of private drinking water wells.

How can xylenes affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the drinking water standards for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that does not cause illness. Then, to be on the safe side, scientists typically set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the drinking water standards for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of xylenes increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals exposed to a chemical. Health effects are also determined by a number of personal factors. These include:

- How old are they?
- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

Drinking water with levels of xylenes well above the drinking water standard for extended periods of time increases the risk of damage to the nervous system, liver and kidneys.

How likely are xylenes to cause cancer?

The ability of xylenes to cause cancer in humans is unknown. The International Agency for Research on Cancer has determined that xylenes are not classifiable as to its ability to cause cancer in humans.

Is there a medical test to see if I have been exposed to xylenes?

Laboratory tests can detect xylenes or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylenes and the levels of xylenes breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylenes quickly leave the body. These tests are not routinely available at your doctor's office.

Should I continue to use my drinking water if xylenes are found?

Levels of xylenes less than the drinking water standard of 10,000 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of illness. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

For additional health information: Please call the Florida Department of Health at 877-798-2772 between 8:00 a.m. and 5:00 p.m. Or visit us online at http://www.doh.state.fl.us/Disease_ctrl/epi/index.html

For more information about the health effects from exposure to xylenes in different situations and at higher levels than those usually found in drinking water wells: Please see the ATSDR ToxFAQs for xylenes at www.atsdr.cdc.gov/tfacts71.pdf

APPENDIX F
Letter Template

The following is a template. Each CHD can modify as needed.

County Health Department

Water Sample results

Sample Date

Letter Date

Mr. XXX
or Current Resident
Address
City, FL

Sample
FLUWID
County:
Sampler:

Dear Sir or Madam:

On XXXXXXXX XX, XXXX, a water sample was collected from your well by the local County Health Department (CHD) and sent to the Florida Department of Health (DOH) Laboratory for analyses. Your well was sampled as part of DOH's effort, together with the Florida Department of Environmental Protection, to ensure safe drinking water for all of its citizens.

This letter is to inform you of the sampling results. Attached is the laboratory summary report listing the analytical results from the physical and chemical tests performed and a brochure on How to Read the Laboratory Report.

The following chemical compounds were detected in concentrations greater than the Florida drinking water standards (Maximum Contaminant Level (MCL) or Health Advisory Levels (HAL)).

Chemical	**Concentration**	**MCL**	**HAL**	**units**

The following chemical compounds were detected in concentrations greater than the Florida secondary drinking water standards. Secondary standards reflect non-health based concerns and are often referred to as nuisance constituents.

Chemical	**Concentration**	**MCL**	**HAL**	**units**

The following chemical compounds were detected, but in concentrations less than Florida drinking water standards (Maximum Contaminant Level (MCL) or Health Advisory Levels (HAL).

Chemical	**Concentration**	**MCL**	**HAL**	**units**

(If no MCL violations)

If you have any questions please contact XXX County Health Department at (XXX) XXX-XXXX for more information.

(If MCL violations)

This advisory is based on health concerns and a representative from the County Health Department will contact you with information on obtaining a clean water supply. Additionally, DEP will send materials on water treatment options available to you at no charge. We recommend that your water supply not be used for drinking purposes for a prolonged period of time.

Thank you for allowing DOH to test your private well water.

Sincerely,

Signature
Name of County Health Department

Enclosure(s)

APPENDIX G
Contact Information

Updated: 7/18/2012
8/6/2012
11/09/2012
2/15/2013

Bureau of Environmental Health
Water and Onsite Sewage Section

4052 Bald Cypress Way
Bin C-22
Tallahassee, FL 32399-1742
(850) 245-4240

Bureau Chief
Patti Anderson, P.E.
(850) 245-4241
Patti_Anderson@doh.state.fl.us

Administrator, Water and Onsite Sewage Section
Gerald Briggs
(850) 245-4075
Gerald_Briggs@doh.state.fl.us

Administrator, Water Programs Sub-Section
Bob Vincent
(850) 245-4250
Bob_Vincent@doh.state.fl.us

Well Surveillance Program Manager
Michael Berry
(850) 245-4444 ext 2074
Michael_Berry@doh.state.fl.us

SUPER Act, Drycleaning Solvent Cleanup Program Supervisor
Larry Gordon, P.G.
(850) 245-4579
Larry_Gordon@doh.state.fl.us

Drinking Water Toxics Program Supervisor
Charles Donahue
(850) 245-4069
Charles_Donahue@doh.state.fl.us

General Survey QA, Completions, Extensions, Draft Maps
Michael Berry (850) 245-4444 ext 2074
Larry Gordon (850) 245-4579 (Petroleum or Drycleaner)
Charlie Donahue (850) 245-4069 (Toxics)

Survey/Sampling Weekly Notification
Larry Waszink (850) 245-4444 ext 2833
Larry Gordon (850) 245-4579

GPS Equipment & Evaluation Scheduling
Gilbert Hoover (850) 245-4444 ext 2868

LaserFiche Questions, Accounts, Password Reset
Michael Berry (850) 245-4444 ext 2074
Irena Stoilova (850) 245-4444 ext 2309

EH Water Intranet/Internet Mapping Website
Charles Donahue (850) 245-4069

Sample Request Extensions, Completions
Mark Evans (850) 245-4444 ext 2159
Larry Gordon (850) 245-4579 (Petroleum or Drycleaner)
Mark Pritzl (850) 245-4444 ext 2296
Charlie Donahue (850) 245-4069 (Toxics)

Toxicology
Charlie Donahue (850) 245-4069

Database Queries
Michael Berry (850) 245-4444 ext 2074
Irena Stoilova (850) 245-4444 ext 2309

Reimbursement
Michael Berry (850) 245-4444 ext 2074

Training Schedule/Video Conferences
Gilbert Hoover (850) 245-4444 ext 2868

Doorhangers/FLUWID Tags/Sample Results
Larry Waszink (850) 245-4444 ext 2833

STARS/Notification Letter Generator
Michael Berry (850) 245-4444 ext 2074

Department of Health Laboratory

1217 N Pearl St
Jacksonville, FL 32202

QA Administrator
Oria Smith
(904) 791-1788
Oria_Smith@doh.state.fl.us

Organic Chemistry Administrator
Yvette Wilson
(904) 791-1506
Yvette_Wilson@doh.state.fl.us

Inorganic Chemistry Administrator
Janet Hartin
(904) 791-1785
Janet_Hartin@doh.state.fl.us

Department of Environmental Protection

Petroleum Cleanup Section
Jeff Priddle, P.G.
2600 Blair Stone Rd
MS 4540
Tallahassee, FL 32399-2400
(850) 245-8860
Jeff.Priddle@dep.state.fl.us

Alan Sakole
York Claims Service
1310 Cross Creek Cir
Ste B
Tallahassee, FL 32301-3728
(850) 671-6362
Alan.Sakole@york-claims.com

Water Supply and Restoration/Drinking Water Toxics
2600 Blair Stone Rd
MS 3515
Tallahassee, FL 32399-2400

Charles Coultas, P.E., Supervisor
(850) 245-8369
Charles.Coultas@dep.state.fl.us

WaterTech (Filter Installation and Maintenance)
(866) 884-6658 or (863) 956-8200

Drycleaner Solvent Cleanup Program
Deinna Nicholson
2600 Blair Stone Rd
MS 4520
Tallahassee, FL 32399-2400
(850) 245-8932
Deinna.Nicholson@dep.state.fl.us

Sharonda Perkins-Davis
(850) 245-8970
Sharonda.A.Perkins@dep.state.fl.us

Waste Cleanup Program
Brian Dougherty
(850) 245-7503
brian.dougherty@dep.state.fl.us

Program Office QA Assignments

County	Assigned Staff	Extension
Alachua	Pritzl	2296
Baker	Mtenga	2298
Bay	Mtenga	2298
Bradford	Pritzl	2296
Brevard	Hoover	2868
Broward	Gordon	4579
Calhoun	Mtenga	2298
Charlotte	Stoilova	2309
Citrus	Stoilova	2309
Clay	Stoilova	2309
Collier	Mtenga	2298
Columbia	Pritzl	2296
Dade	Waszink	2833
Desoto	Hoover	2833
Dixie	Pritzl	2296
Duval	Mtenga	2298
Escambia	Pritzl	2296
Flagler	Mtenga	2298
Franklin	Hoover	2868
Gadsden	Waszink	2833
Gilchrist	Pritzl	2296
Glades	Mtenga	2298
Gulf	Hoover	2868
Hamilton	Pritzl	2296
Hardee	Mtenga	2298
Hendry	Waszink	2833
Hernando	Waszink	2833
Highlands	Mtenga	2298
Hillsborough	Berry	2074
Holmes	Hoover	2868
Indian River	Hoover	2868
Jackson	Hoover	2868
Jefferson	Hoover	2868
Lafayette	Pritzl	2296

County	Assigned Staff	Extension
Lake	Waszink	2833
Lee	Waszink	2833
Leon	Waszink	2833
Levy	Pritzl	2296
Liberty	Hoover	2868
Madison	Hoover	2868
Manatee	Pritzl	2296
Marion	Mtenga	2298
Martin	Pritzl	2296
Monroe	Waszink	2833
Nassau	Pritzl	2296
Okaloosa	Mtenga	2298
Okeechobee	Hoover	2868
Orange	Gordon	4579
Osceola	Mtenga	2298
Palm Beach	Stoilova	2309
Pasco	Waszink	2833
Pinellas	Hoover	2868
Polk	Pritzl	2296
Putnam	Pritzl	2296
St. Johns	Pritzl	2296
St. Lucie	Waszink	2833
Santa Rosa	Waszink	2833
Sarasota	Stoilova	2309
Seminole	Mtenga	2298
Sumter	Waszink	2833
Suwannee	Pritzl	2296
Taylor	Pritzl	2296
Union	Pritzl	2296
Volusia	Hoover	2868
Wakulla	Hoover	2868
Walton	Mtenga	2298
Washington	Hoover	2868

APPENDIX H
Useful Web Sites

Florida Department of Health

http://www.doh.state.fl.us

Well Surveillance Internet Site
http://superact.org

Well Surveillance Sharepoint Site
http://def.sharepoint.doh.ad.state.fl.us/DEH/Water/well_default.aspx

Toxicological Water Fact sheets for the twenty most common chemicals in Groundwater
http://www.doh.state.fl.us/environment/water/fact_sheet.html

MCL/HAL list
http://www.myfloridaeh.com/community/health-advisory/HAL_list.pdf

EHWater internal websites
http://deh00swbgis99/EHWater_Flex_Test/index.html

EHWater external
http://gis.doh.state.fl.us/ehwater/index.html

Well Surveillance evaluation and suggestion survey:
http://def.sharepoint.doh.ad.state.fl.us/DEH/Water/Lists/Well%20Surveillance%20Program%20Questionnaire/NewForm.aspx?Source=http%3A%2F%2Fdef%2Esharepoint%2Edoh%2Ead%2Estate%2Efl%2Eus%2FDEH%2FWater%2FLists%2FWell%2520Surveillance%2520Program%2520Questionnaire%2Foverview%2Easpx

LaserFiche Login
http://dohswapeh0001/laserfiche8

Florida Department of Environmental Protection

http://www.dep.state.fl.us

Oculus
http://dwmedms.dep.state.fl.us/Oculus/servlet/login

Health Effects Language for Certain Contaminants
http://www.dep.state.fl.us/water/drinkingwater/hel_eff.htm

Analytical results for public water systems
http://www.dep.state.fl.us/water/drinkingwater/chemdata.htm
The results are by year and type of sample (i.e. VOC, Inorganics etc) and you will need to know the DEP PWS system ID.

DEP Sampling SOPs
http://www.dep.state.fl.us/water/sas/sop/sops.htm
FS2000, 2200 and 2300 apply to Well Surveillance

Contact information for Public Water Systems
http://www.dep.state.fl.us/water/drinkingwater/bfr.htm

Agency for Toxic Substances and Disease Registry

http://www.atsdr.cdc.gov

ToxFAQs—Hazardous Substance Fact Sheets

http://www.atsdr.cdc.gov/toxfaq.html

Toxicological Profiles—Much more in depth information on chemical contaminants

http://www.atsdr.cdc.gov/toxpro2.html

Note: You can also order a CD ROM free of charge if you don't wish to use the internet site.

Water Management District Websites

South Florida WMD

http://www.sfwmd.gov

Southwest Florida WMD

http://www.swfwmd.state.fl.us

Northwest Florida WMD

http://nwfwmd.state.fl.us

St. Johns River WMD

http://sjr.state.fl.us

Suwannee River WMD

http://www.srwmd.state.fl.us

US EPA Water Web Page

http://www.epa.gov/ebtpages/water.html

Florida Geographic Data Library

http://www.fgdl.org

APPENDIX I
MCL / HAL Listing

Florida Department of Health Environmental Chemistry Analyte List

Last update 9/26/2011

HAL = Health Advisory Level
MCL = Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
ug/L = micrograms per Liter or parts per billion
mg/L = milligrams per Liter or parts per million
MFL = million fibers per liter

Chemical	DOH	units	MCL/HAL
1,1,1,2-TETRACHLOROETHANE	1	ug/L	HAL
1,1,1-TRICHLOROETHANE	200	ug/L	MCL
1,1,2,2-TETRACHLOROETHANE	1	ug/L	HAL
1,1,2-TRICHLOROETHANE	5	ug/L	MCL
1,1-DICHLOROETHANE	70	ug/L	HAL
1,1-DICHLOROETHYLENE	7	ug/L	MCL
1,2,3-TRICHLOROBENZENE	70	ug/L	HAL
1,2,3-TRICHLOROPROPANE	40	ug/L	HAL
1,2,4-TRICHLOROBENZENE	70	ug/L	MCL
1,2,4-TRIMETHYLBENZENE	35	ug/L	HAL
1,2-DICHLOROETHANE	3	ug/L	MCL
1,2-DICHLOROPROPANE	5	ug/L	MCL
1,3,5-TRIMETHYLBENZENE	35	ug/L	HAL
2,3,7,8 TCDD (DIOXIN)	0.00003	ug/L	MCL
2,4,5-T	70	ug/L	HAL
2,4,5-TP (SILVEX)	50	ug/L	MCL
2,4-D	70	ug/L	MCL
2,4-DB	56	ug/L	HAL
2,4-DINITROTOLUENE	0.05	ug/L	HAL
2,6-DINITROTOLUENE	0.05	ug/L	HAL
2-BUTANONE	4200	ug/L	HAL
2-HEXANONE	280	ug/L	HAL
4,4'-DDD	0.1	ug/L	HAL
4,4'-DDE	0.1	ug/L	HAL
4,4'-DDT	0.1	ug/L	HAL
4-NITROPHENOL	56	ug/L	HAL
ACENAPHTHYLENE	210	ug/L	HAL
ACIFLUORFEN	1	ug/L	HAL
ALACHLOR	2	ug/L	MCL
ALDICARB (SUM OF ALL ALDICARBS)	7	ug/L	HAL
ALDICARB SULFONE (SUM OF ALL ALDICARBS)	7	ug/L	HAL
ALDRIN	0.002	ug/L	HAL
ALLYL CHLORIDE	35	ug/L	HAL
ALPHA-BHC	0.04	ug/L	HAL
ALPHA-CHLORDANE	2	ug/L	MCL
ALUMINUM	200	ug/L	SMCL
AMETRYN	63	ug/L	HAL
ANTHRACENE	2100	ug/L	HAL
ANTIMONY	6	ug/L	MCL

ARSENIC	10	ug/L	MCL
ASBESTOS	7	MFL	MCL
ATRAZINE	3	ug/L	MCL
BARIUM	2000	ug/L	MCL
BENTAZON	210	ug/L	HAL
BENZENE	1	ug/L	MCL
BENZO(A)ANTHRACENE	0.2	ug/L	HAL
BENZO(A)PYRENE	0.2	ug/L	MCL
BENZO(B)FLUORANTHENE	0.2	ug/L	HAL
BENZO(G,H,I)PERYLENE	210	ug/L	HAL
BENZO(K)FLUORANTHENE	0.5	ug/L	HAL
BERYLLIUM	4	ug/L	MCL
BETA-BHC	0.02	ug/L	HAL
BORON	600	ug/L	HAL
BROMACIL	90	ug/L	HAL
BROMOBENZENE	4000	ug/L	HAL
BROMOCHLOROMETHANE	91	ug/L	HAL
BROMODICHLOROMETHANE (as sum of THM)	80	ug/L	MCL
BROMOFORM (as sum of THM)	80	ug/L	MCL
BROMOMETHANE	9.8	ug/L	HAL
BUTACHLOR	259	ug/L	HAL
BUTYL BENZYL PHTHALATE	140	ug/L	HAL
BUTYLATE	350	ug/L	HAL
C/T-1,3-DICHLOROPROPENE	0.4	ug/L	HAL
C-1,2-DICHLOROETHYLENE	70	ug/L	MCL
C-1,3-DICHLOROPROPYLENE	0.4	ug/L	HAL
CADMIUM	5	ug/L	MCL
CARBARYL	700	ug/L	HAL
CARBOFURAN	40	ug/L	MCL
CARBON DISULFIDE	350	ug/L	HAL
CARBON TETRACHLORIDE	3	ug/l	MCL
CHLORAMBEN	110	ug/L	HAL
CHLORDANE	2	ug/L	MCL
CHLORIDE	250,000	ug/L	SMCL
CHLOROBENZILATE	0.1	ug/L	HAL
CHLOROETHANE	12	ug/L	HAL
CHLOROFORM (as sum of THM)	80	ug/L	MCL
CHLOROMETHANE	2.7	ug/L	HAL
CHLORONEB	91	ug/L	HAL
CHLOROPICRIN	7.3	ug/L	HAL
CHLOROTHALONIL	1.5	ug/L	HAL
CHLORPROPHAM	1400	ug/L	HAL
CHLORPYRIPHOS (DURSBAN)	21	ug/L	HAL
CHROMIUM	100	ug/L	MCL
CHRYSENE	4.8	ug/L	HAL
CIS-PERMETHRIN	350	ug/L	HAL
COLOR	15	UNITS	SMCL
COPPER	1000	ug/L	SMCL
CYANIDE	200	ug/L	MCL
CYCLOATE	35	ug/L	HAL

DACTHAL (DCPA)	70	ug/L	HAL
DALAPON	200	ug/L	MCL
DELTA-BHC	2.1	ug/L	HAL
DI(2-ETHYLHEXYL)ADIPATE	400	ug/L	MCL
DI(2-ETHYLHEXYL)PHTHALATE	6	ug/L	MCL
DIBENZ(A,H)ANTHRACENE	0.2	ug/L	HAL
DIBROMOCHLOROMETHANE (as sum of THM)	80	ug/L	MCL
DIBROMOCHLOROPROPANE	0.2	ug/L	MCL
DIBROMOMETHANE	70	ug/L	HAL
DICAMBA	210	ug/L	HAL
DICHLORODIFLUOROMETHANE	1000	ug/L	HAL
DICHLOROMETHANE (MECL)	5	ug/L	MCL
DICHLORPROP	35	ug/L	HAL
DICHLORVOS	0.1	ug/L	HAL
DIELDRIN	0.002	ug/L	HAL
DIETHYL PHTHALATE	5600	ug/L	HAL
DIMETHYL PHTHALATE	70000	ug/L	HAL
DI-N-BUTYLPHTHALATE	700	ug/L	HAL
DINOSEB	7	ug/L	MCL
DIPHENAMID	210	ug/L	HAL
DIQUAT	20	ug/L	HAL
ENDOSULFAN I (total)	42	ug/L	HAL
ENDOSULFAN II (Total)	42	ug/L	HAL
ENDOTHALL	100	ug/L	MCL
ENDRIN	2	ug/L	MCL
EPTC	180	ug/L	HAL
ETHOPROP	0.7	ug/L	HAL
ETHYLBENZENE	30	ug/L	SMCL
ETHYLBENZENE	700	ug/L	MCL
ETHYLENE DIBROMIDE (EDB)	0.02	ug/L	MCL
ETHYLMETHACRYLATE	630	ug/L	HAL
ETRIDIAZOLE	175	ug/L	HAL
FENARIMOL	455	ug/L	HAL
FLUORENE	500	ug/L	HAL
FLUORIDE	2000	ug/L	SMCL
FLUORIDE	4000	ug/L	MCL
FLURIDONE	560	ug/L	HAL
FOAMING AGENTS	500	ug/L	SMCL
Gamma-CHLORDANE	2	ug/L	MCL
GLYPHOSATE	700	ug/L	MCL
HALOACETIC ACIDS (TOTAL)	60	ug/L	MCL
HEPTACHLOR	0.4	ug/L	MCL
HEPTACHLOR EPOXIDE	0.2	ug/L	MCL
HEXACHLOROBENZENE (HCB)	1	ug/L	MCL
HEXACHLOROBUTADIENE	0.5	ug/L	HAL
HEXACHLOROCYCLOPENTADIENE	50	ug/L	MCL
HEXACHLOROETHANE	1	ug/L	HAL
HEXAZINONE	230	ug/L	HAL
INDENO(1,2,3-CD)PYRENE	0.2	ug/L	HAL
IRON	300	ug/L	SMCL

ISOPHORONE	37	ug/L	HAL
ISOPROPYLBENZENE (CUMENE)	700	ug/L	HAL
LEAD	15	ug/L	MCL
LINDANE (G-BHC)	0.2	ug/L	MCL
MANGANESE	50	ug/L	SMCL
M-DICHLOROBENZENE	600	ug/L	HAL
MERCURY	2	ug/L	MCL
METHACRYLONITRILE	5	ug/L	HAL
METHIOCARB	35	ug/L	HAL
METHOMYL	180	ug/L	HAL
METHOXYCHLOR	40	ug/L	MCL
METHYL ACRYLATE	210	ug/L	HAL
METHYL BUTYL KETONE	280	ug/L	HAL
METHYL ETHYL KETONE	4200	ug/L	HAL
METHYLMETHACRYLATE	25	ug/L	HAL
METHYL-TERT-BUTYL-ETHER	35	ug/L	HAL
METOLACHLOR	110	ug/L	HAL
METRIBUZIN	180	ug/L	HAL
MEVINPHOS	1.8	ug/L	HAL
MOLYBDENUM	100	ug/L	HAL
MONOCHLOROBENZENE	100	ug/L	MCL
NAPHTHALENE	100	ug/L	HAL
NAPROPAMIDE	700	ug/L	HAL
N-BUTYLBENZENE	280	ug/L	HAL
NICKEL	100	ug/L	MCL
NITRATE	10000	ug/L	MCL
NITRATE & NITRITE (TOTAL)	10000	ug/L	MCL
NITRITE	1000	ug/L	MCL
NORFLURAZON	280	ug/L	HAL
N-PROPYLBENZENE	280	ug/L	HAL
O-CHLOROTOLUENE	100	ug/L	HAL
O-DICHLOROBENZENE	600	ug/L	MCL
OXAMYL	200	ug/L	MCL
PCB-AROCHLOR	0.5	ug/L	MCL
P-CHLOROTOLUENE	100	ug/L	HAL
P-DICHLOROBENZENE	75	ug/L	MCL
PEBULATE	350	ug/L	HAL
PENTACHLOROPHENOL	1	ug/L	MCL
pH	6.5 – 8.5	Units	SMCL
PHENANTHRENE	210	ug/L	HAL
PICLORAM	500	ug/L	MCL
POLYCHLORINATED BIPHENYLS (PCBs)	0.5	ug/L	MCL
PROMETRYN	28	ug/L	HAL
PRONAMIDE	53	ug/L	HAL
PROPACHLOR	91	ug/L	HAL
PROPAZINE	10	ug/L	HAL
PROPOXUR (BAYGON)	2.8	ug/L	HAL
PYRENE	210	ug/L	HAL
SEC-BUTYLBENZENE	280	ug/L	HAL
SELENIUM	50	ug/L	MCL

SILVER	100	ug/L	SMCL
SIMAZINE	4	ug/L	MCL
SODIUM	160,000	ug/L	MCL
STIROFOS	1.5	ug/L	HAL
STYRENE	100	ug/L	MCL
SULFATE	250	ug/L	SMCL
T-1,2-DICHLOROETHYLENE	100	ug/L	MCL
T-1,3-DICHLOROPROPYLENE	0.4	ug/L	HAL
TEBUTHIURON	490	ug/L	HAL
TERBACIL	91	ug/L	HAL
TERBUTRYN	330	ug/L	HAL
TERT-BUTYLBENZENE	280	ug/L	HAL
TETRACHLOROETHYLENE	3	ug/L	MCL
THALLIUM	2	ug/L	MCL
TOLUENE	40	ug/L	SMCL
TOLUENE	1000	ug/L	MCL
TOTAL DISSOLVED SOLIDS	500,000	ug/L	SMCL
TOTAL PCBS	0.5	ug/L	MCL
TOXAPHENE	3	ug/L	MCL
TRANS-PERMETHRIN	350	ug/L	HAL
TRIADEMIFON (Bayleton)	210	ug/L	HAL
TRIBUTYL TIN OXIDE	4.4	ug/L	HAL
TRICHLOROETHYLENE	3	ug/L	MCL
TRICHLOROFLUOROMETHANE	2100	ug/L	HAL
TRIFLURALIN	4.5	ug/L	HAL
VERNOLATE	7	ug/L	HAL
VINYL CHLORIDE	1	ug/L	MCL
XYLENES	20	ug/L	SMCL
XYLENES	1000	ug/L	MCL
ZINC	5000	ug/L	SMCL

APPENDIX J
Fee Schedule

Attachment D

Fee Schedule for Well Survey and Sampling Services

The Contractor shall be compensated in accordance with the following rates as evidenced by an executed Task Assignment Notification Form or Task Assignment Change Order Form.

ITEM	FEE SCHEDULE
I. Drinking Water Well Survey/ Well Location	
Well Survey Request (as outlined in Attachment C Scope of Services)	$135.00/survey
GPS Well Location or Well Property Location (or if >10 wells per request)	$11.00/well
II. Drinking Water Sample Collection	
Three or Less Water Samples from the same well	$77.00/well
More than three Water Samples from the same well	$87.00/well
III. Out of County (additional fee for above services)	$20.00/survey/location /sample
IV. Laboratory Analysis (see pages 3 - 8 for DOH Lab Analysis Fees Schedule and Analyte List)	
V. Miscellaneous Expenses	
A. Expedited Turnaround on Lab Samples	2 X Fee Schedule
B. Bacteria Testing	$21.00/sample
C. Nitrate Field Screening Testing	$5.00/test
D. Request for CHD Assistance (no GPS location or well sampling required)	$36.00/visit

VI. Cost Reimbursement as Authorized by an Executed Task Assignment

A. Administrative Services

Administrative services costs shall be compensated on a cost reimbursement basis in the amount specified in each Task Assignment Notification Form and Change Order as outlined in paragraph 5. A. of the Contract and Section VIII of the Scope of Services. These costs shall be invoiced on a quarterly basis.

B. Training and Travel

The Contractor shall be reimbursed for the actual costs of training and travel up to the amount specified in each Task Assignment Notification Form and Change Order as outlined in Paragraph 5.C. of the Contract and Section IX of the Scope of Services. All associated travel expenses will be reimbursed in accordance with Section 112.061, F.S. These costs shall be invoiced on a quarterly basis.

C. Equipment Maintenance and Repair

The Contractor shall be reimbursed for the actual cost of maintenance and repairs of DEP and DOH owned GPS equipment as outlined in Paragraph 5.C. of this Contract and Section IX of the Scope of Services up to the amount specified in each Task Assignment Notification Form and Change Order. These costs shall be invoiced on a quarterly basis.

D. Equipment Purchase / Replacement

The Contractor shall be reimbursed for the actual cost of GPS equipment purchased as outlined in Paragraph 5.C. of this Contract and Section IX of the Scope of Services up to the amount specified in each Task Assignment Notification Form and Change Order. Any equipment purchased over $1,000.00 will be the property of DEP and must be pre-authorized by DEP. Other equipment purchase requirements are specified in Paragraph 25, Section A through E of this contract. Attachment F (Property Reporting Form) will be used to list all equipment purchased under this contract.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

DOH ENVIRONMENTAL CHEMISTRY FEES FOR ANALYSES

☎ When requesting analyses, please order by *TEST SCHEDULE* ☎

(The Superscript Number in the Test Schedule indicates That Test Schedule is further defined in the Analyte List)

TEST SCHEDULE	ANALYSIS DESCRIPTION (METHOD NUMBER IN PARENTHESIS)	ANALYSIS FEE
64E-8	Lead & Nitrate For 64E-8 Compliance for DOH Regulated Systems	30.00
525[1]	Extractables, Chlorinated & Organophosphorus Pesticides (EPA 525.2)	230.00
62-524	Ethylene Dibromide & Nitrate For Delineated Areas (EDB & TNO_3)	65.00
AG	Silver (EPA 200.9)	30.00
AL	Aluminum (EPA 200.8)	25.00
ALKALINITY	Alkalinity (SM 2320B)	21.00
AS	Arsenic (EPA 200.8)	25.00
BA	Barium (EPA 200.7)	25.00
BE	Beryllium (EPA 200.8)	25.00
BROM	Bromacil & Diuron (DOH-Dupont)	50.00
CA	Calcium (EPA 200.7)	25.00
CARBAMATES[2]	Carbamate Pesticides (EPA 531.1-DOH)	50.00
CD	Cadmium (EPA 200.8)	25.00
CL	Chloride (SM 4500-Cl F)	18.00
CN	Total Cyanide (SM 4500-CN E)	90.00
COLOR	Color (SM 2130 C)	15.00
CR	Chromium (EPA 200.8)	25.00
CU	Copper (EPA 200.8)	25.00
DI[3]	Deionized Water Metals (EPA 200.8)	150.00
DQPQ	Diquat & Paraquat (EPA 549.2 - DOH)	65.00
EDB	Ethylene Dibromide (EPA 504.1)	45.00
ENDOTHALL	Endothall (EPA 548.1)	150.00
F_300	Fluoride (EPA 300.0)	18.00
FE	Iron (EPA 200.7)	25.00
FUMIGANTS[4]	Fumigant Pesticides (EPA 504.1)	45.00
GLYPHOSATE	Glyphosate (EPA 547 Modified)	50.00
HAA5[5]	Organic Disinfection By-Products (EPA 552.2)	150.00
HERBICIDES[6]	Chlorinated Acids (EPA 515.3)	250.00
HG	Mercury (EPA 245.1)	45.00
HGFISH	Mercury In Fish (EPA 245.6-DOH)	50.00

TEST SCHEDULE	ANALYSIS DESCRIPTION (METHOD NUMBER IN PARENTHESIS)	ANALYSIS FEE
HGSOIL	Mercury In Soil (EPA 245.6-DOH)	50.00
K	Potassium (EPA 200.7)	25.00
MBAS	Foaming Agents / Surfactants (SM 5540 C)	40.00
METALSFISH[9]	Metals In Fish (EPA 200.8)	90.00
METALSFOOD[8]	Metals In Food (EPA 200.8 & EPA 200.7)	235.00
METALSSOIL[10]	Metals In Soil (EPA 200.8)	210.00
METALSWIPE[9]	Metals In Wipes (EPA 200.8)	95.00
MG	Magnesium (EPA 200.7)	25.00
MN	Manganese (EPA 200.8)	25.00
MO	Molybdenum (EPA 200.8)	25.00
NA	Sodium (EPA 200.7)	25.00
NI	Nickel (EPA 200.8)	25.00
VOC[22]	Non-SUPER Act Purgeable (Volatile) Organics (EPA 524.2)	60.00
P_INORG[11]	Primary Inorganics	340.00
P_METALS[12]	Primary Metals	252.00
P505[13]	Organohalide Pesticides & PCBs (EPA 505)	45.00
PB	Lead (EPA 200.9)	25.00
PBDUST	Lead In Dust (EPA SW 846 Method 7000 B)	50.00
PBMISC	Lead In Miscellaneous Items (EPA SW 846 Method 7000 B)	50.00
PBPAINT	Lead In Paint (EPA SW 846 Method 7000 B)	50.00
PBPOTTERY	Lead In Pottery (EPA SW 846 Method 7000 B)	50.00
PBSOIL	Lead In Soil (EPA SW 846 Method 7000 B)	50.00
PBWIPE	Lead Content In Dust Wipes (EPA SW 846 Method 7000 B)	50.00
PESTFISH[14]	Organochlorine Pesticides In Fish (PAM 304-1)	70.00
PESTFOODS[15]	Organophosphorus & Organochlorine Pesticides In Foods (PAM-specific)	50.00
PESTSOIL[16]	Organochlorine Pesticides In Soil (EPA 8081A)	50.00
PH	PH (4500-H^+ B)	10.00
PO4	Orthophosphate as Phosphorus (EPA 365.1 & SM 4500-P F)	25.00
PS_INORG[18]	Primary & Secondary Inorganics (Excluding Silver & Odor)	450.00
PS_METALS[19]	Primary & Secondary Metals (Excluding Silver)	265.00
S_INORG[20]	Secondary Inorganics (Excluding Silver)	165.00
S_METALS[21]	Secondary Metals (Excluding Silver)	70.00
SB	Antimony (EPA 200.8)	25.00
SE	Selenium (EPA 200.8)	25.00
SN	Tin (EPA 200.8)	25.00
SO4	Sulfate (EPA 300.0)	30.00
TDS	Total Dissolved Solids (SM 2540 C)	15.00
TI	Titanium (EPA 200.8)	25.00
SUPER[22]	SUPER Act Purgeable (Volatile) Organics (EPA 524.2)	60.00
TL	Thallium (EPA 200.8)	25.00
TNO3	Nitrate, Nitrite & Total (EPA 353.2 & SM 4500-NO_3F)	20.00
TOC	Total Organic Carbon (SM 5310 C)	25.00
TURB	Turbidity (SM 2130 B)	15.00
ZN	Zinc (EPA 200.7)	25.00

APPENDIX K
Lab Qualifiers

RESULT QUALIFIER KEY

A	Result based on countable colonies as indicated (TSA[1] only or MEA[2] only).
B	Potential lead risk to children; contact David Krause at 850-245-4115.
C	Result exceeds Maximum contamination level (MCL) as in Chap. 62-550 or 520, F.A.C.
D	Confirmation test performed beyond holding time; result is suspect.
E	Analyte not detected; quality control out of range; result is the method detection limit.
F	Result exceeds allowable level (Manual for the Certification of Labs, EPA 1991).
G	Result based on dissolved ions, i.e., the sample was filtered by the lab.
H	Value exceeds DOH Health Advisory Level (HAL).
I	Approximate result between method detection limit and practical quantification limit; supporting evidence for identity.
J	Approximate result; quality control out of range.
K	Approximate result; result out of calibrated range of instrument.
L	Wipe sample (such as a particle swab) included significant particles of debris.
M	Method approved only as a screen for this analyte.
N	Analyte not reported due to interference; result is the method detection limit.
O	Method not approved for this analyte; result for informational purposes only.
P	No valid trip blank result for this analyte; result is suspect.
Q	Method detection limit reflects sample dilution due to Matrix or interference effects
R	Result exceeds recommended lead level of 0.50% by weight.
S	Analyte not screened; result is the method detection limit.
T	Peak detected; supporting evidence for identity; result is the method detection limit.
U	Analyte not detected; result is the method detection limit, if applicable.
V	Analyte detected in the sample and laboratory reagent blank; result is suspect.
W	Result is the sum of three components.
X	Analyte detected in both the sample and the trip blank.
Y	Analysis from improperly preserved sample; result is suspect.
Z	Zero result with qualifier indicates colonies TNTC[3].

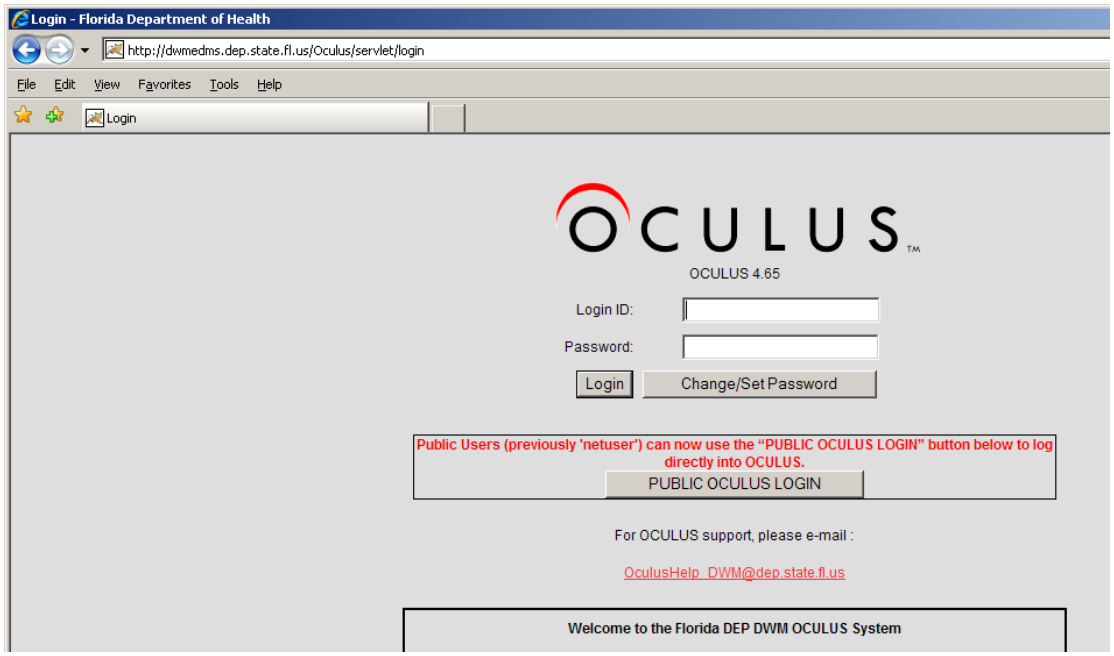
1 *typticase soy agar*
2 *malt extract agar*
3 *too numerous to count*

APPENDIX L
Using Oculus: A Quick Guide

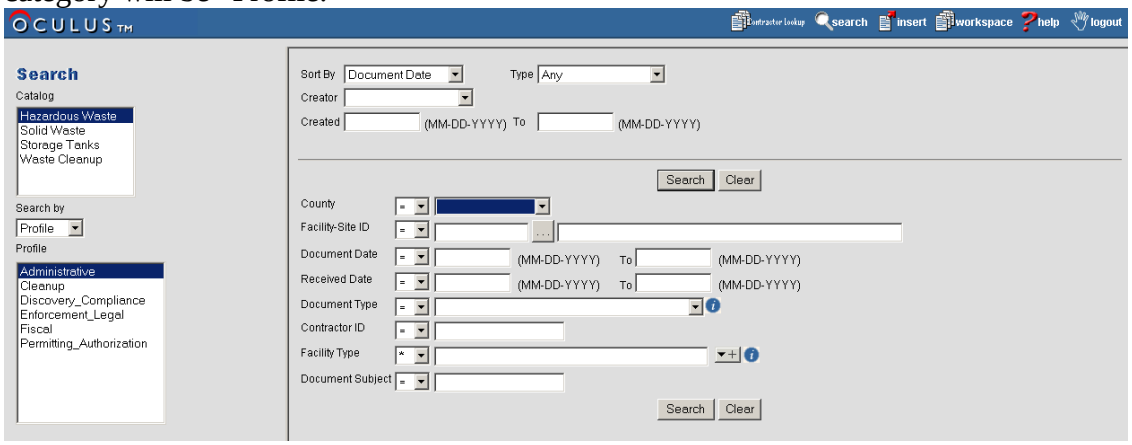
Using Oculus: A Quick Guide
Updated 4/2/2012

1. Go to http://dwmedms.dep.state.fl.us/Oculus/servlet/login.

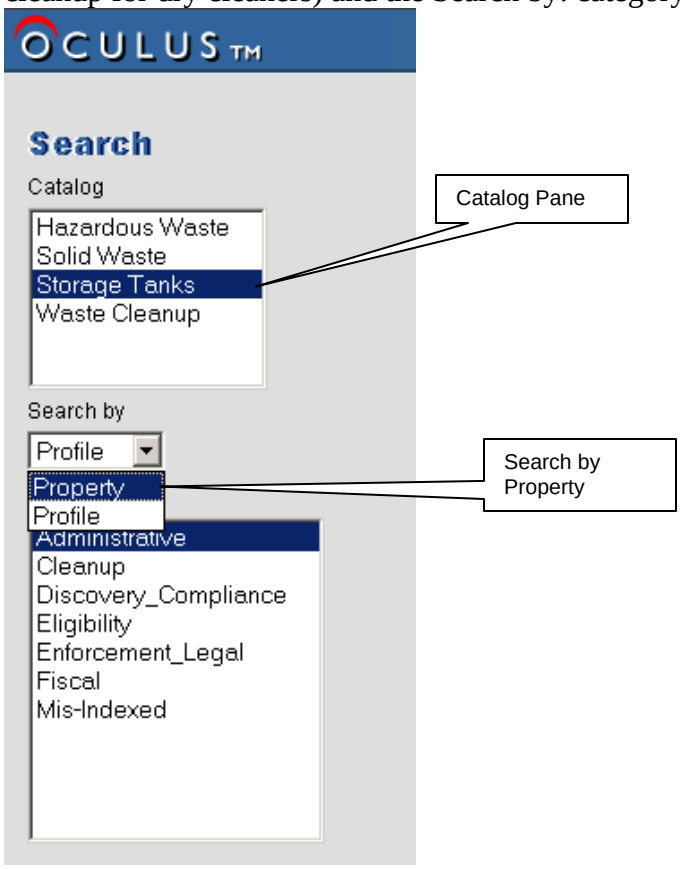
2. Click on the “PUBLIC OCULUS LOGIN” button..



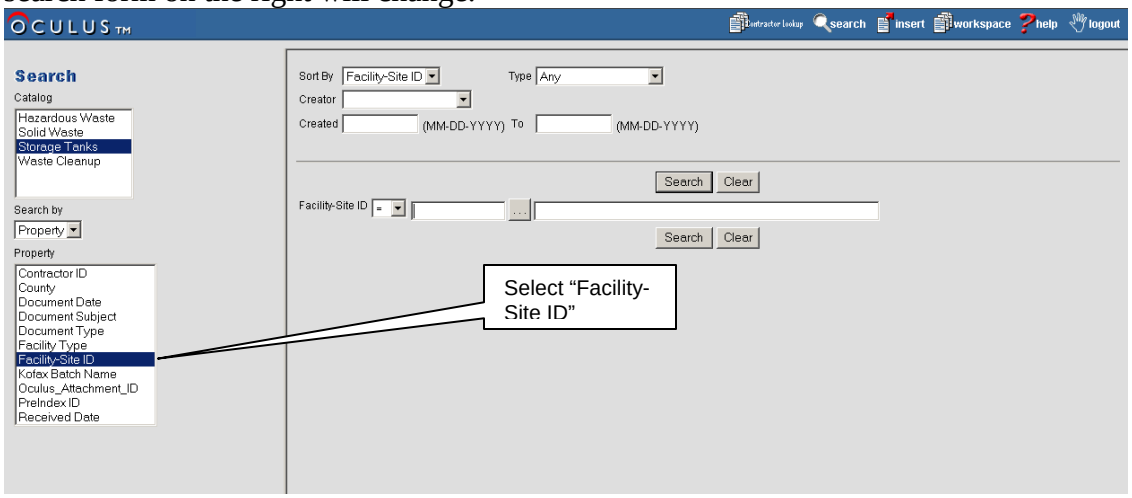
3. When you enter, your search catalog will be Hazardous Waste and your Search by category will be “Profile.”



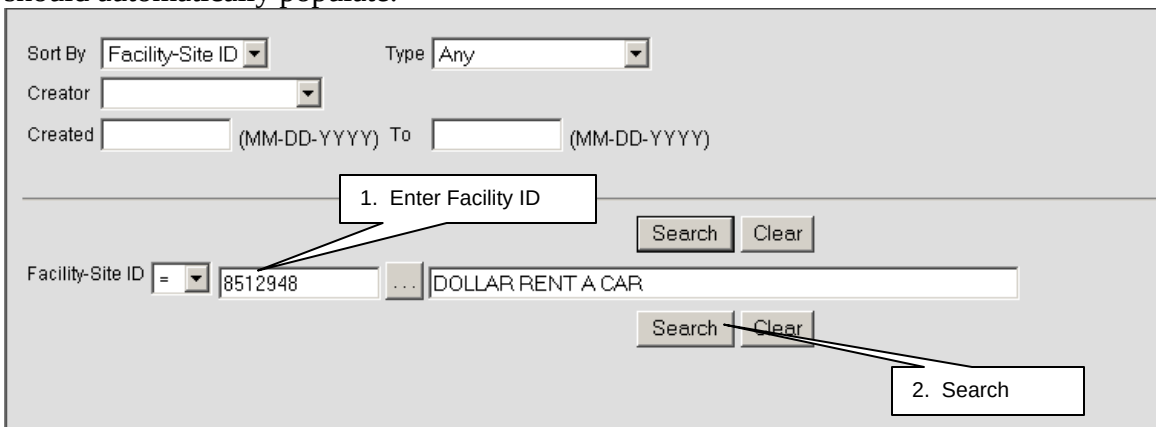
4. Change the Catalog to your chosen project (storage tanks for petroleum or waste cleanup for dry cleaners) and the Search by: category to “Property.”



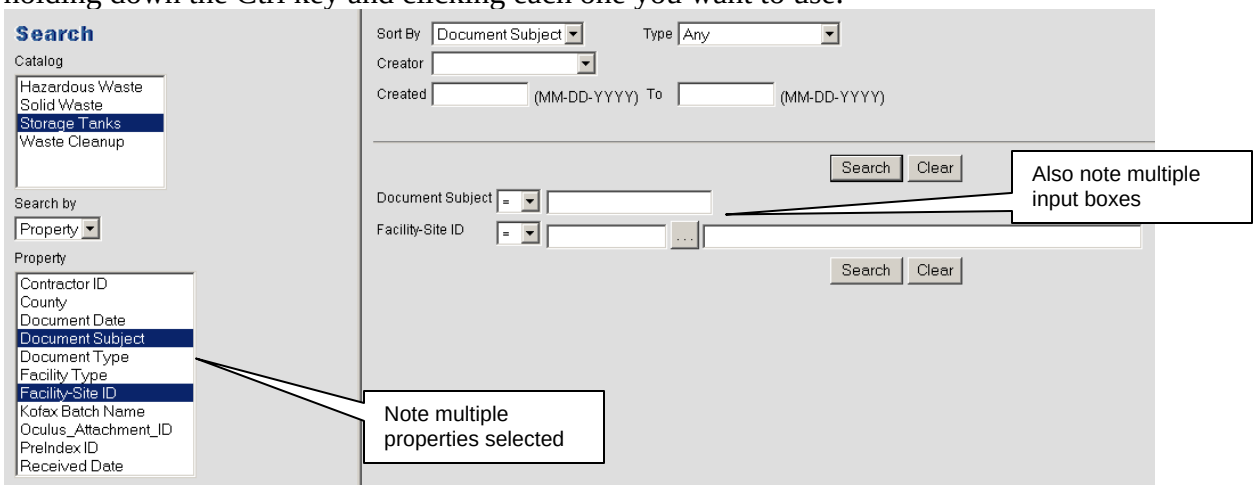
5. Under the Property list, click Facility-Site ID to highlight it. You will notice that the search form on the right will change.



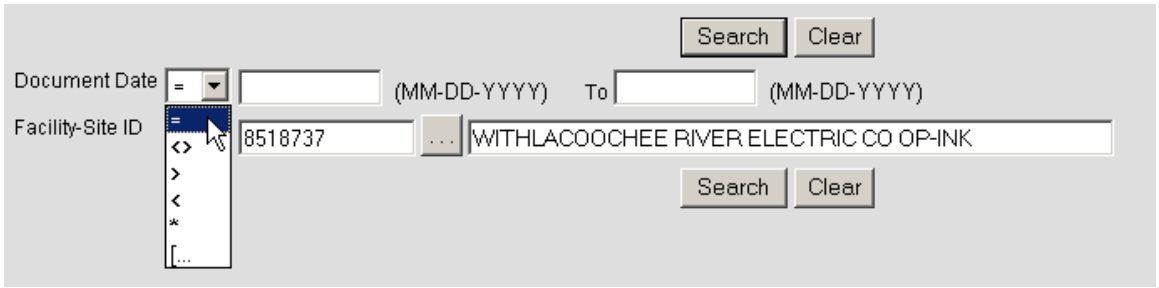
6. Type the facility ID into the search box and click the Search button. The facility name should automatically populate.



7. Note: if you want to narrow your search, you can query on multiple categories by holding down the Ctrl key and clicking each one you want to use.



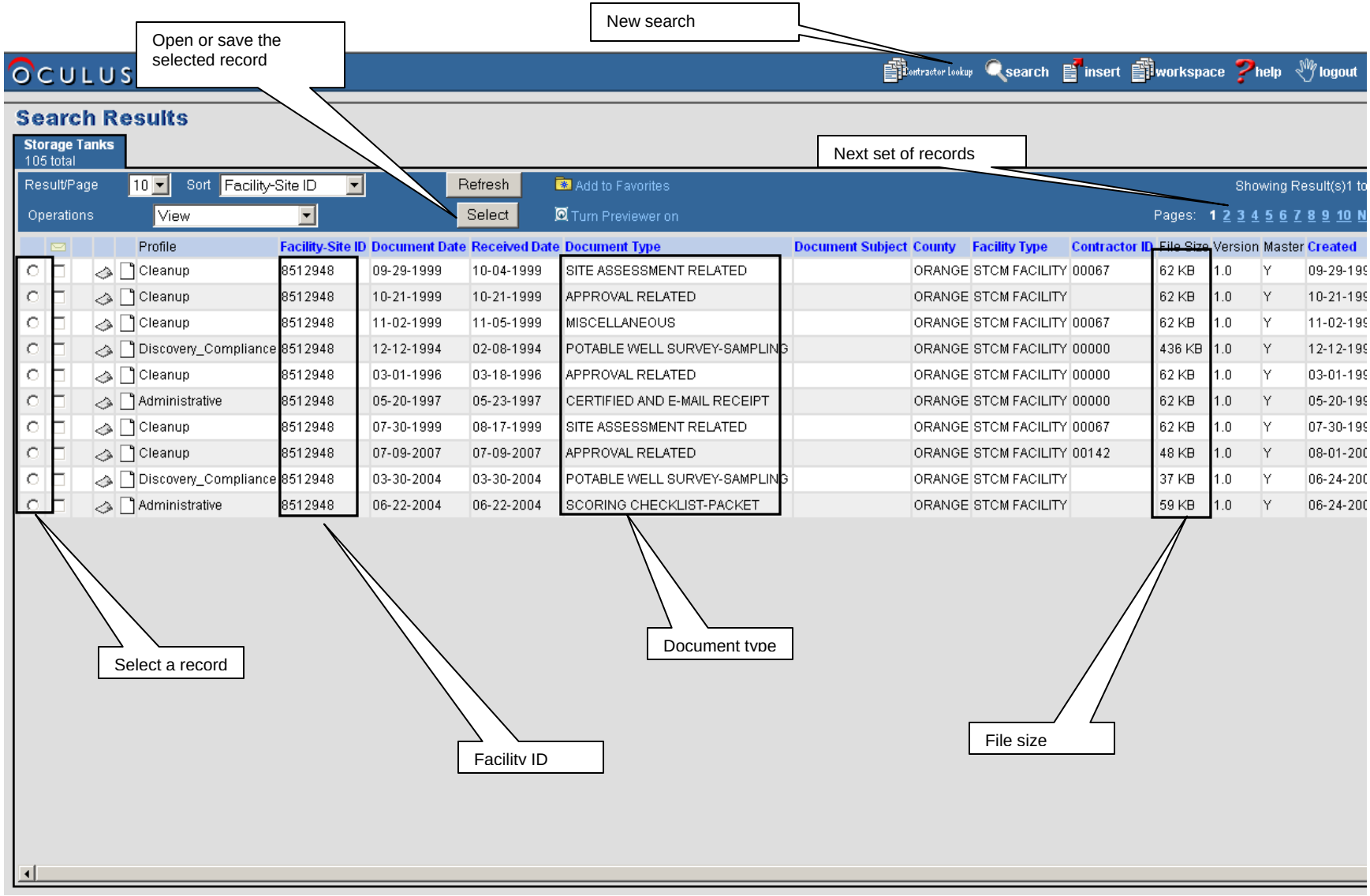
8. If you want to search by date, you'll probably need to update the operator dropdown. Also, in most cases, you will only need to fill in the first date field. Leave the other blank unless you use the [… operator.



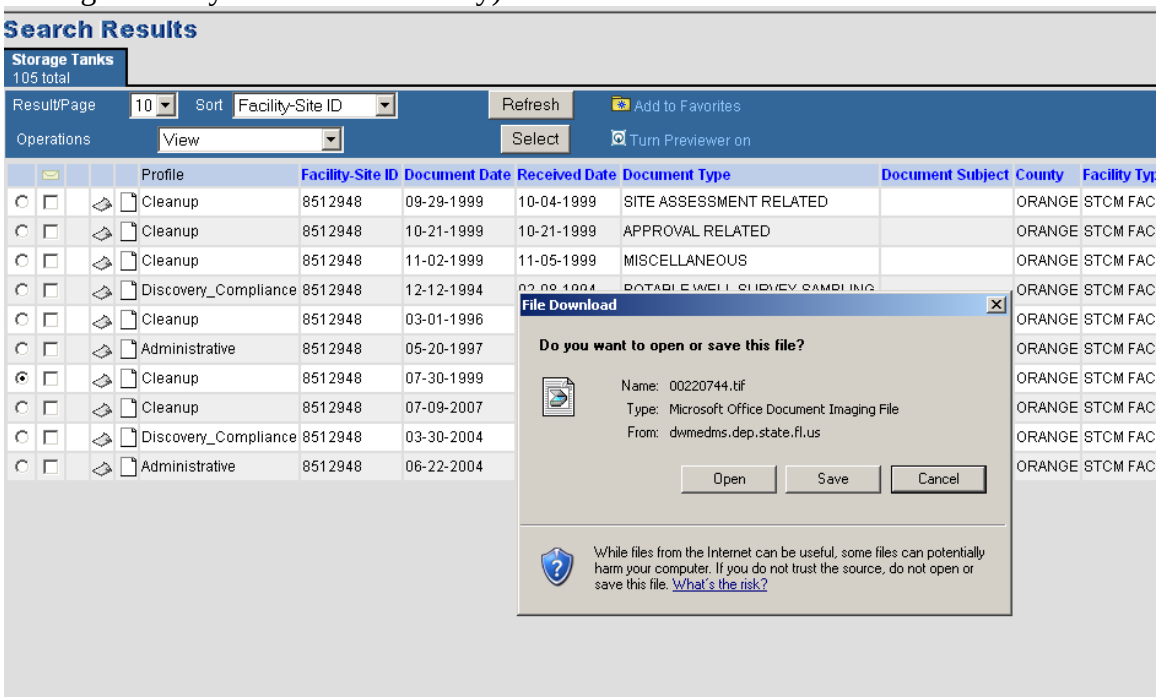
The operators are as follows:

= -- Is equal to
<> -- Is not equal to
> -- Is greater than
< -- Is less than
* -- Wildcard. Do not use in the date search.
[… -- Between. You'll need to fill out both date fields for this one.

9. Once you are done, click the Search button. You should now see the Search Results screen. Some useful points are illustrated below.


New search
Open or save the selected record
Next set of records
OCULUS
Contractor lookup
search
insert
workspace
help
logout
Search Results
Storage Tanks
105 total
Result/Page
10
Sort
Facility-Site ID
Refresh
Add to Favorites
Showing Result(s)1 to
Operations
View
Select
Turn Previewer on
Pages: 1 2 3 4 5 6 7 8 9 10 N
Profile
Facility-Site ID
Document Date
Received Date
Document Type
Document Subject
County
Facility Type
Contractor ID
File Size
Version
Master
Created
Cleanup 8512948 09-29-1999 10-04-1999 SITE ASSESSMENT RELATED ORANGE STCM FACILITY 00067 62 KB 1.0 Y 09-29-199
Cleanup 8512948 10-21-1999 10-21-1999 APPROVAL RELATED ORANGE STCM FACILITY 62 KB 1.0 Y 10-21-199
Cleanup 8512948 11-02-1999 11-05-1999 MISCELLANEOUS ORANGE STCM FACILITY 00067 62 KB 1.0 Y 11-02-199
Discovery_Compliance 8512948 12-12-1994 02-08-1994 POTABLE WELL SURVEY-SAMPLING ORANGE STCM FACILITY 00000 436 KB 1.0 Y 12-12-199
Cleanup 8512948 03-01-1996 03-18-1996 APPROVAL RELATED ORANGE STCM FACILITY 00000 62 KB 1.0 Y 03-01-199
Administrative 8512948 05-20-1997 05-23-1997 CERTIFIED AND E-MAIL RECEIPT ORANGE STCM FACILITY 00000 62 KB 1.0 Y 05-20-199
Cleanup 8512948 07-30-1999 08-17-1999 SITE ASSESSMENT RELATED ORANGE STCM FACILITY 00067 62 KB 1.0 Y 07-30-199
Cleanup 8512948 07-09-2007 07-09-2007 APPROVAL RELATED ORANGE STCM FACILITY 00142 48 KB 1.0 Y 08-01-200
Discovery_Compliance 8512948 03-30-2004 03-30-2004 POTABLE WELL SURVEY-SAMPLING ORANGE STCM FACILITY 37 KB 1.0 Y 06-24-200
Administrative 8512948 06-22-2004 06-22-2004 SCORING CHECKLIST-PACKET ORANGE STCM FACILITY 59 KB 1.0 Y 06-24-200
Select a record
Facility ID
Document type
File size

10. Select the record you are interested in and then click the Select button. You will be given the option of saving the record to your hard drive or opening it using the default software (usually MS Office Document Imaging, although there are Adobe Acrobat files finding their way into Oculus recently).



For purposes of the Well Surveillance program, some of the document types you will want to focus on are listed below:

- SITE ASSESSMENT RELATED—This usually will include a site assessment report containing historical information and, importantly, a site plan.
- SOURCE REMOVAL RELATED—Usually includes a site plan and lots of information on how and when the tanks were removed.
- ELIGIBILITY PACKET RELATED—Often includes discharge reports with some form of site sketch.
- MONITORING PLANS AND REPORTS RELATED—This will also often have a site plan.
- POTABLE WELL SURVEY/SAMPLING—Old DOH well surveys. Sometimes useful.
- SOURCE REMOVAL RELATED—Tank closure reports, generally. These will often include a site plan of some description. Usefulness of these plans is spotty.
- INSPECTION RELATED—Compliance or removal inspections. The newer ones are in pdf format and often have pictures that can be used to determine the tank location.

For further information, see the "Finding the Site…" in Appendix

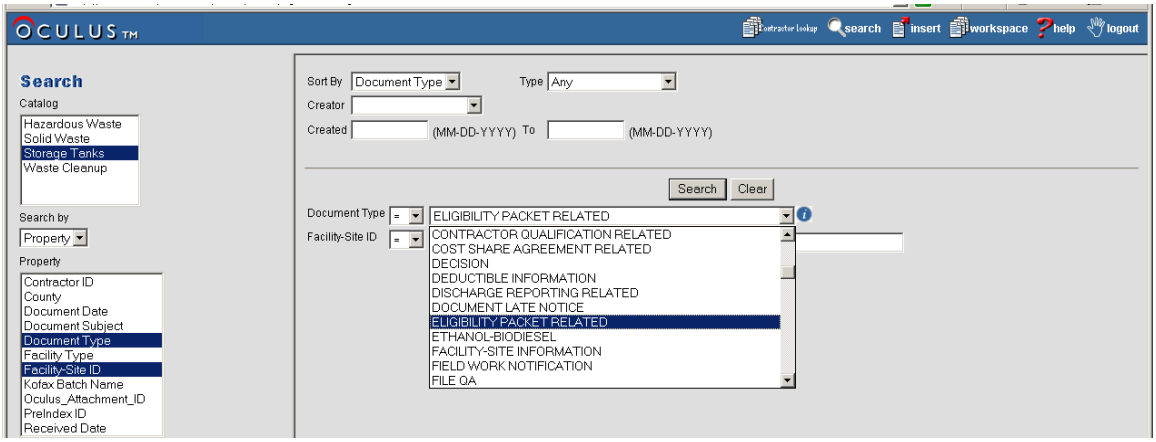
APPENDIX M
Finding the Site

Putting it all together: Finding the tanks.

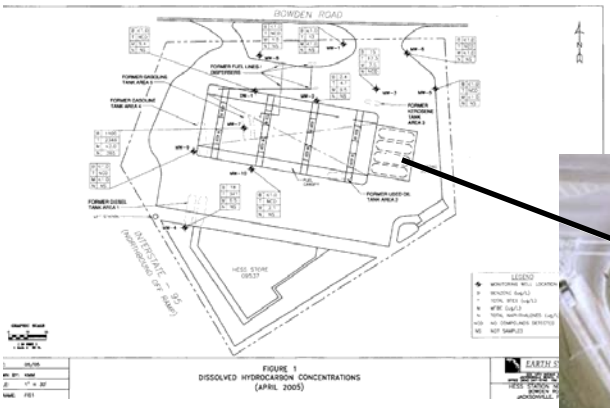
1. Check Oculus for a site plan.

   Best found under the following document types:

   - SITE ASSESSMENT RELATED
   - MONITORING PLANS AND REPORTS RELATED
   - CLOSURE RELATED
   - ELIGIBILITY PACKET RELATED
   - DISCHARGE REPORTING RELATED
   - SOURCE REMOVAL RELATED



2. If a site plan exists, check it against aerial photograph to see if the location is obvious.

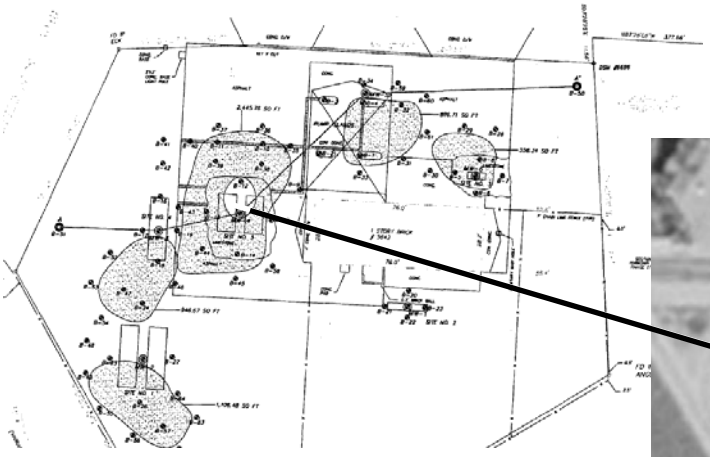


Site Plan

Google Earth Aerial

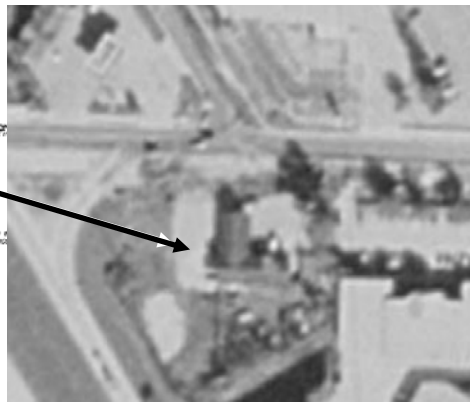
Both ArcMap and Google Earth can be set to display the latitude and longitude of your cursor location, so one of these two are probably the best tool for this job. See "Setting the Display" below to properly set up both programs.

3. If the current aerial does not match the site plan, try to check some previous years. Google Earth often has aerials going back to the early 1990's.



Site Plan

1999 Google Earth Aerial



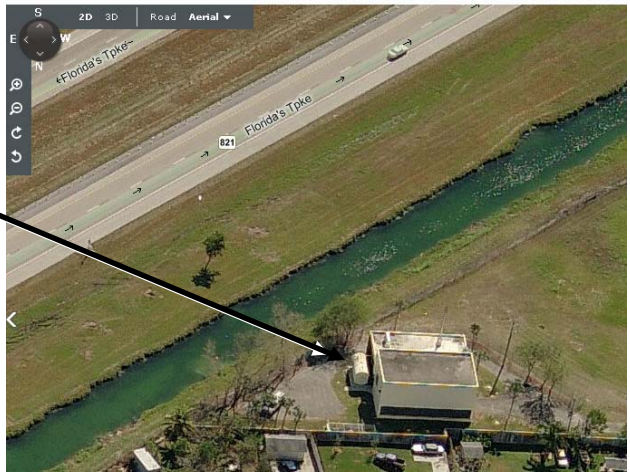
Some other places to get historic aerials online (also check with your particular county's surveyor's office, too):
http://ufdcweb1.uflib.ufl.edu/ufdc/?c=flap
(Florida Aerial Photography, run by the UF Digital Collection)

http://www.historicaerials.com/
(Historic Aerials.com)

http://www.dot.state.fl.us/surveyingandmapping/apac.shtm
(FDOT Survey and Mapping Office—requires free registration and you'll need a Mr.SiD viewer of some kind if you're not using ArcMap—links are on the site.)

4. If there is no site plan, some digging is in order. Check Oculus for inspections (INSPECTION RELATED). Many of the recent ones have photographs that can be used to help identify the tank locations.

Inspection Photo



Bing "Bird's Eye" Aerial

Inspection Photo

Google Earth Street View

Bing and Google street views work well here.

The files named 8839847_Comparison and 9809576_Comparison can be found in Laserfiche under \Comparison Project Files\Sent to DEP. These files show a couple further examples of the use of inspection photos.

5. On occasion, there will be little of value in Oculus. If you have a local tanks program contact, make good use of them. A list of local program contacts can be found at: http://www.dep.state.fl.us/waste/categories/tanks/default.htm

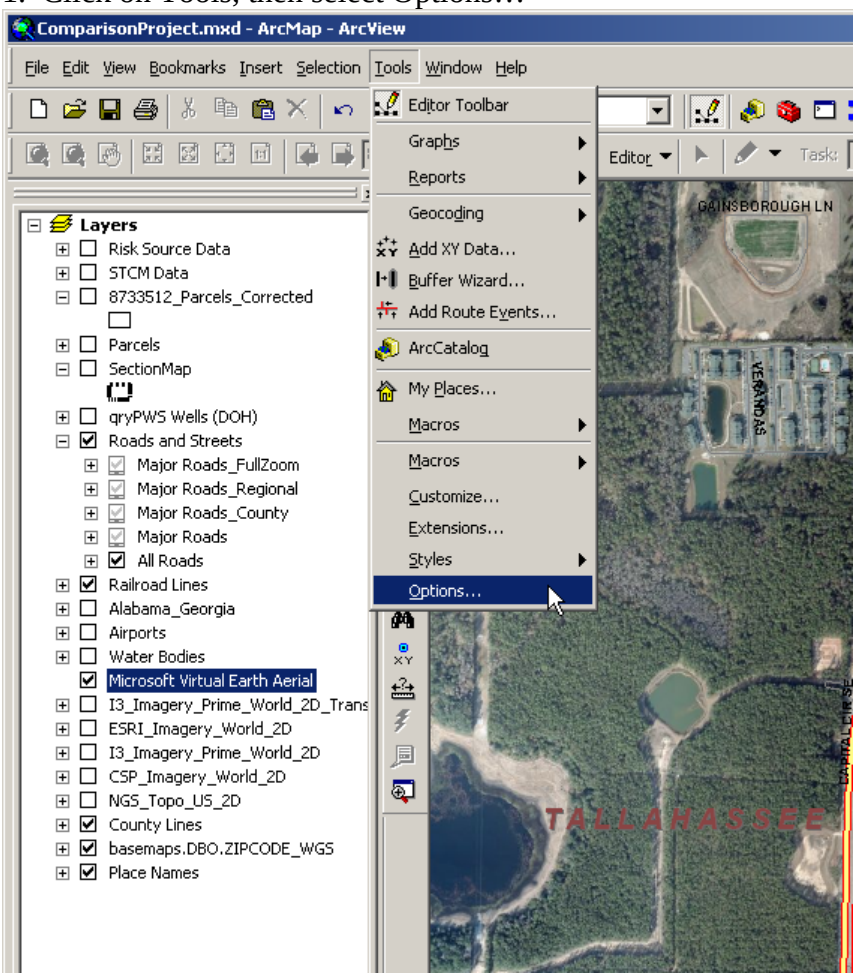
6. Also, location information will be spotty or non-existent and even your local contacts may be unable to help. In that case, a best guess based on parcel information cross-checked with Facility owner information may be the best that can be done.

Setting the Coordinate Display

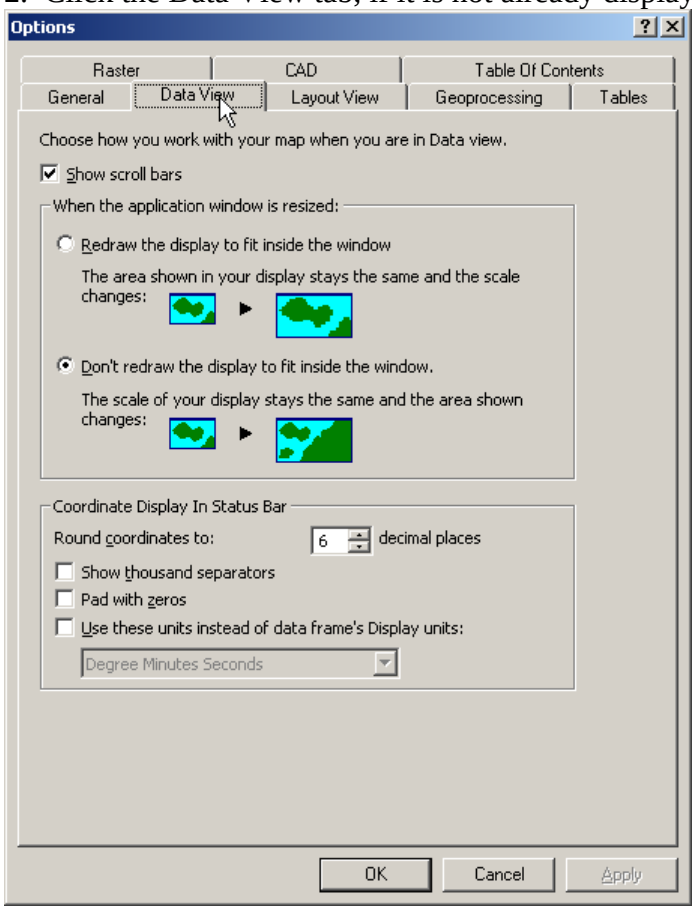
ArcMap

The coordinates of where your cursor is located can be displayed in ArcMap in several ways. The latitude and longitude is what we need to use. We will also need to set the number of decimal places to 6, so that the data will be useful.

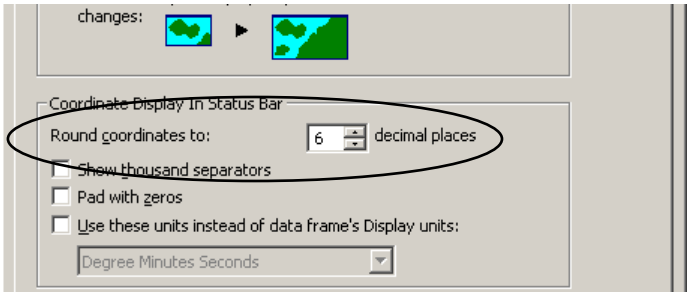
1. Click on Tools, then select Options…



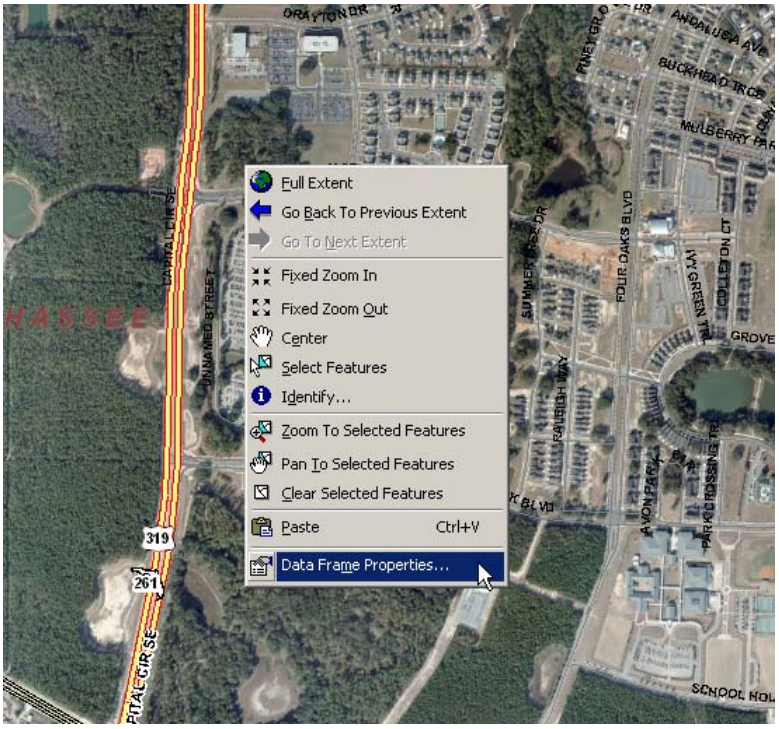
2. Click the Data View tab, if it is not already displayed.



3. Under Coordinate Display in Status Bar, set the number of decimal places to 6. Then click OK.

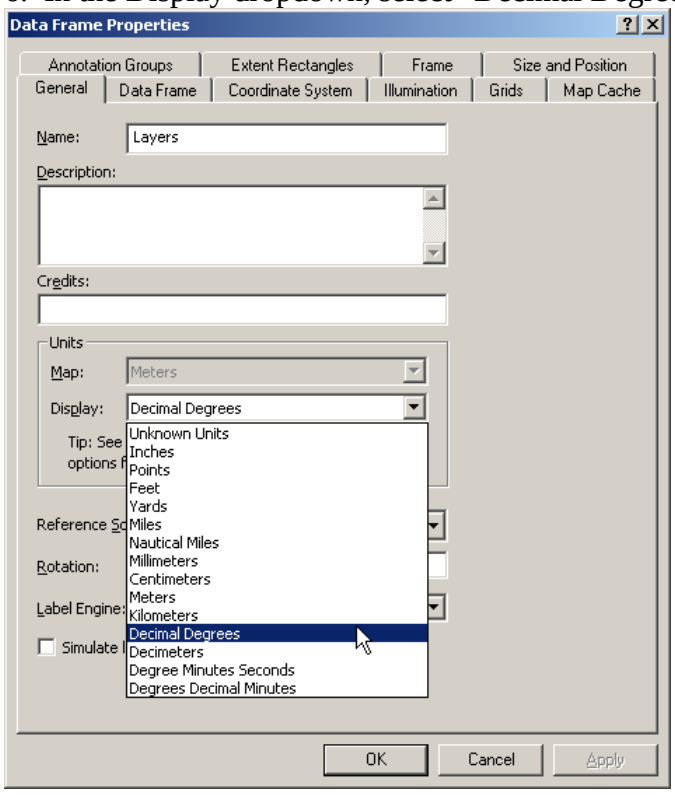


4. In data view, right click and select “Data Frame Properties…”

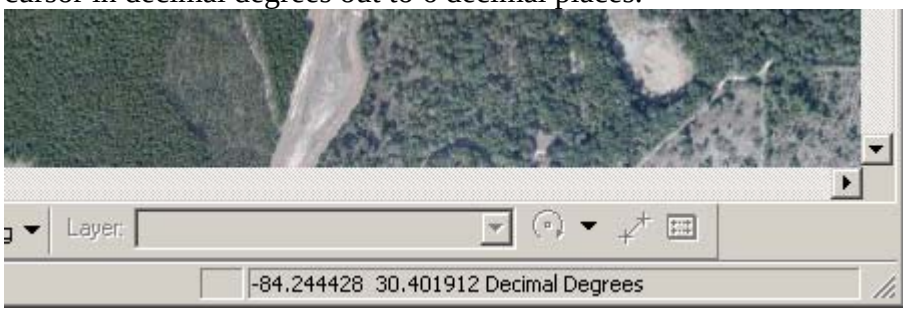


5. Select the “General” tab if it is not already displayed.

6. In the Display dropdown, select “Decimal Degrees,” then Click OK.



7. The status bar in the lower right-hand corner should now display the lat/lon of your cursor in decimal degrees out to 6 decimal places.

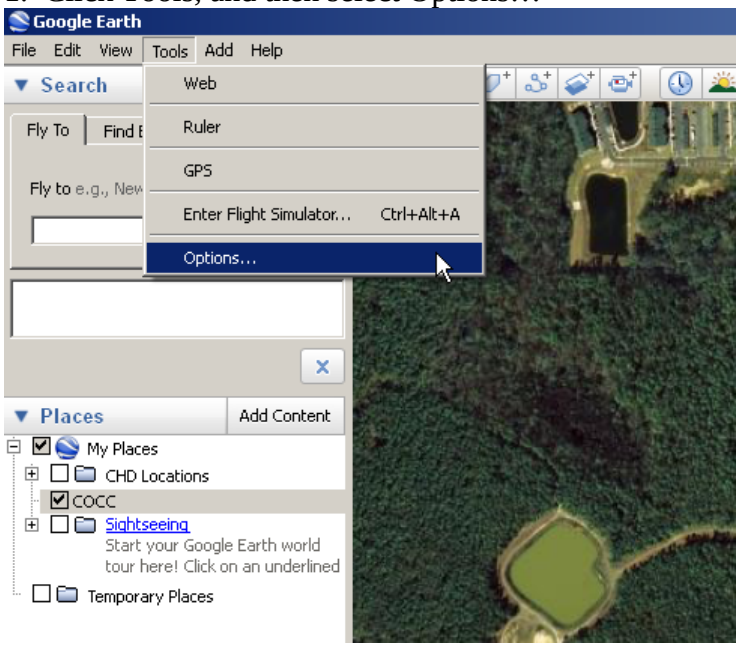


Note that the coordinates displayed are Longitude, **then** Latitude (following the X,Y Cartesian system as opposed to the more common Lat/Lon display that you may be used to). Don't get confused when doing data entry.

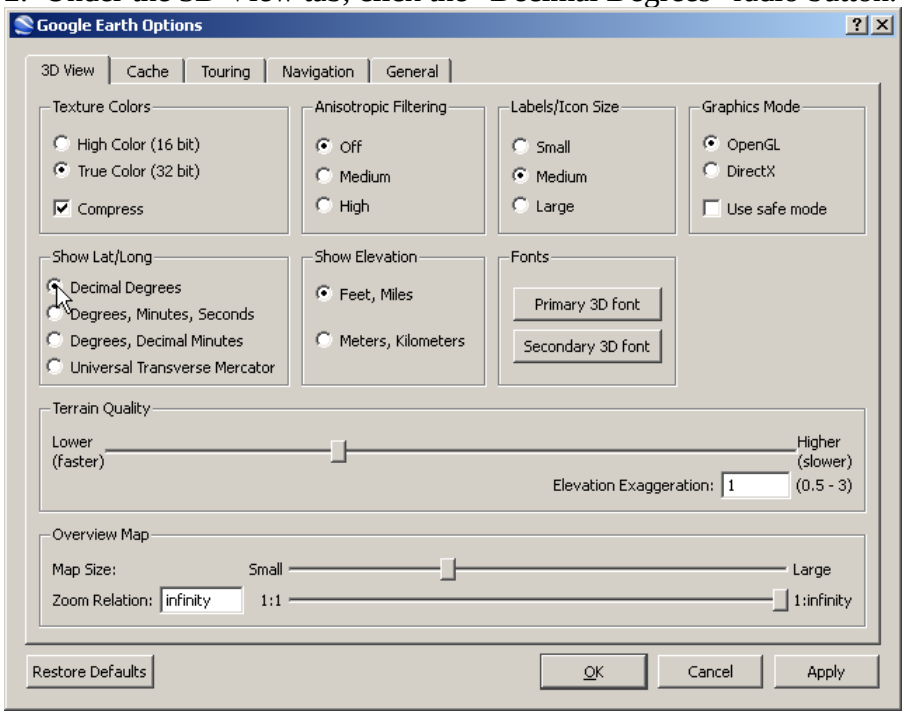
Google Earth

Google Earth can also be set to display the latitude/longitude in several different ways. We need 6 decimal points, at least. Fortunately, Google Earth defaults to 6, so the setup is a bit easier.

1. Click Tools, and then select Options…



2. Under the 3D View tab, click the "Decimal Degrees" radio button. Then click OK.



3. The latitude and longitude of your cursor should now display at the bottom of the screen in decimal degrees out to 6 decimal points.