FRONTIER™ PRECISION

# FieldSeeker® GIS for Mosquito Control

# Mosquito Control

## User Guide

Revision 5 - 8/`15/2017

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## Questions?

Should you have any questions concerning this Agreement, please call Frontier Precision at (208) 324-8006.

# Table of Contents

# Introduction

## About FieldSeeker GIS

FieldSeeker GIS is an end-to-end system for managing mosquito control operations data. It consists of an Office Web application, mobile data collection applications, and server processing tools.

FieldSeeker is licensed on a per-mobile device basis for field users, and on a per-concurrent-use basis for office users. Licensing is also split between the "core" application and extensions.

### FieldSeeker GIS for Mosquito Control

**Core**

The "core" FieldSeeker GIS application contains tools for everything except ULV truck spraying, which is licensed as an extension. This includes software configuration; service requests; larval inspections, samples, and treatments; adult landing count, trapping, and lab data entry tools; sample collection and lab data entry tools (e.g. dead birds, specimen samples); work review tools; search and query tools; and mapping tools including address geocoding, GPS mapping, online basemaps (imagery, topographic, StreetMap, and others), map navigation, and map printing or export.

**ULV/Adulticiding**

The ULV extension contains tools for recording ULV truck spraying, including configuration tools and a mobile application for collecting data.

### System Components, Hardware and Software Requirements, Installation Instructions

FieldSeeker GIS is built on Esri ArcGIS technology. An ArcGIS for Server license is required to deploy FieldSeeker GIS. The following license levels of ArcGIS for Server are supported:

- Advanced Enterprise
- Standard Enterprise
- Advanced Workgroup

An ArcGIS for Windows Mobile license is also required for each Windows Mobile device that is running FieldSeeker Mobile.

FieldSeeker GIS reporting is built on Microsoft SQL Server Reporting Services.

More details are provided in the *FieldSeeker GIS Installation Guide*, which provides complete instructions on installation and configuration for each Sentinel module. System components and hardware and software requirements for installation are also discussed in detail.

# Finding Additional Information

## Help and User Guides

FieldSeeker GIS help is available in this User Guide and in the *FieldSeeker GIS Installation Guide*. This User Guide provides instructions on basic use and configuration of the software for field technicians and operational supervisors. The installation guide provides guidance for system administrators, including GIS and IT supervisors.

ArcGIS for Server Help is available through the ArcGIS application menu. ESRI's online resource center for ArcGIS for Server can be accessed from http://resources.arcgis.com.

Online self-help resources for handheld devices, including documentation, operating system or firmware updates, support notes and bulletins, white papers, and FAQ's, can be accessed on each manufacturer's Website. For Trimble handheld devices, go to www.trimble.com/support and click the link for your model. For Juniper Systems handheld devices, go to www.junipersys.com/support and click the link for your model.

## Training

FieldSeeker GIS training is available from Frontier Precision. Remote assistance, including product orientation and informal task-oriented training, is included in software maintenance & support. Formal instructor-led on-site training is also available in 1-, 2-, or 3-day formats. For information and pricing, please contact Frontier Precision at (208) 324-8006.

ArcGIS for Windows Mobile Training (including Trimble Certified Positions Training) is also available from Frontier Precision. Training can be provided for any handheld device with any GPS receiver. Trimble Certified training can be provided for ArcPad with Positions or ArcGIS for Windows Mobile with Positions and any Trimble GPS hardware. If you would like to use standard software for other data collection projects, please contact us for a training schedule or for on-site training options.

ESRI Virtual Campus and instructor-led training is available for ArcGIS Online, Desktop, Mobile, and Server. See http://training.esri.com/gateway/index.cfm for help deciding which courses best suit your needs or the needs of your users.

# Technical Assistance

## FieldSeeker GIS Technical Support

High-priority unlimited toll-free phone and email support is available from Frontier Precision. If FieldSeeker GIS software maintenance is current, please use the contact information below to contact support. This technical support covers the mobile devices, server setup, and FieldSeeker GIS software configuration and use.

To contact Technical Support:

Frontier Precision
(208) 324-8006, 8 AM – 5 PM MTN
support@frontierprecision.com

When contacting support, please supply your contact details (name, company, email, phone) and the nature of your inquiry. This helps support to locate your information and history more quickly

Please note that high-priority technical support does not include software maintenance for Esri software, or hardware warranty for Trimble GPS equipment or Juniper Systems hardware. Esri ArcGIS software has Support and Maintenance extensions available separately from Esri; see www.esri.com/support for more details. Trimble GPS equipment comes with 1 year hardware warranty standard, which can be extended two additional years. Please contact Frontier Precision for FieldSeeker GIS software maintenance renewal or hardware warranty extension, and Esri for ArcGIS software maintenance.

If you have not purchased software maintenance, product updates and technical support will not be available.

## Handheld and GPS Support

Technical support for your mobile device is available from the retail outlet where it was purchased, the equipment manufacturer, the warranty service company (e.g. SquareTrade, Asurion), or Frontier Precision, depending on where you purchased it.

## Esri Software Support

ArcGIS software support as it relates to the use of FieldSeeker GIS is obtained through Frontier Precision. Technical assistance for issues, bugs, or defects with standard ArcGIS software is obtained through Esri Support. Technical assistance is included in annual software maintenance. Even if maintenance is not current, self-help resources are also available from Esri's Website.

Live Support from Esri:

(888)377-4575 toll-free
Online request: http://support.esri.com/index.cfm?fa=homepage.policies.gateway

Self-help resources, including patches and service packs, user discussion forums, documentation, support notes and white papers:

http://resources.arcgis.com

# FieldSeeker GIS Workflow


The diagram above illustrates the FieldSeeker GIS workflow.

Typical FieldSeeker GIS workflow involves initial setup and configuration tasks, data entry in the office or lab and in the field, regular data synchronization from field devices, and analysis including reports and map data generation.

FieldSeeker Office/Web and Mobile are both connected to the same data through ArcGIS for Server. Everyone in the organization has the same operational picture in real-time or near real-time.

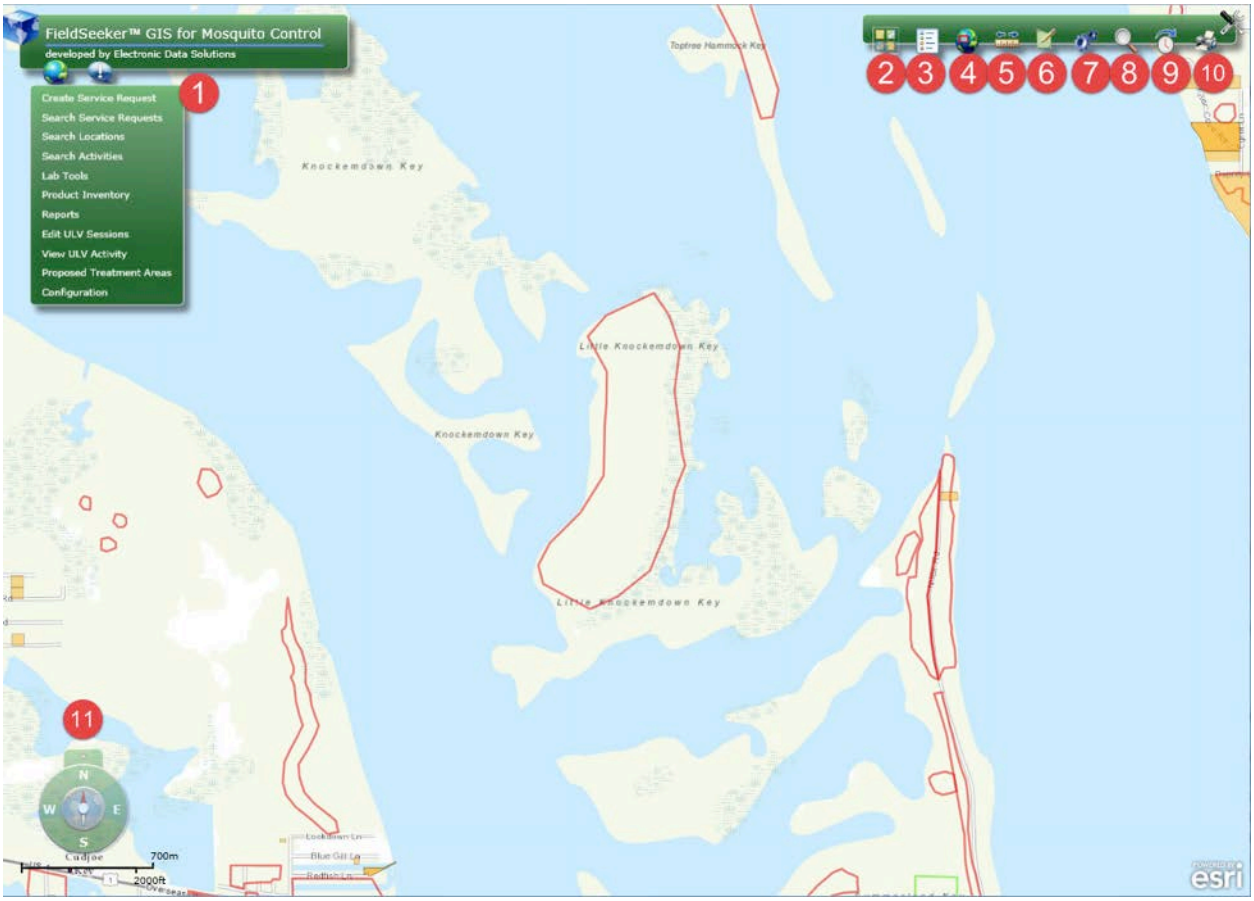
Installation requirements and instructions are covered in the *FieldSeeker GIS Installation Guide*, available from Frontier Precision.

# Office Web Application Operation

FieldSeeker Web is a browser-based application used for office tasks. To start the application, open a Web browser and navigate to the URL for the application. If you are not sure what this is, contact your internal support to find out.

When the application starts, it will show that it is loading data then the main screen will display. The following is an overview of the user interface.

## Web Application User Interface

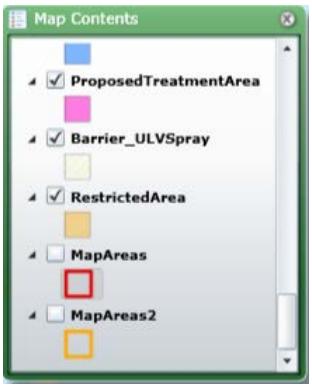



1. Main Menu. Click the map cube to expand or collapse the menu bar. Hover over the globe to display the menu.

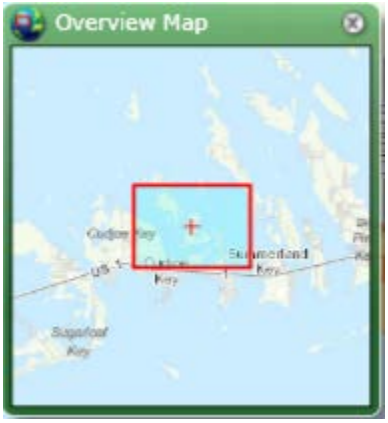

a. Create Service Request – tools to create new service requests for locations by geocoding an address, clicking on the map, or cloning a previous request.
b. Search Service Requests – tools to search for service requests based on any criteria (such as address, caller phone number, status, etc.). Search results can be edited, viewed on a map, re-assigned, closed, cloned, and exported; or the user can view all activities for selected requests or all past requests for the locations selected.
c. Search Locations – tools to search for locations based on any criteria. Search results can be edited, viewed on a map, or exported; the user can create a new service request or activity for a selected location or view all past activities for a location.
d. Search Activities – tools to search for activities based on any criteria. Activity records can be reviewed, edited, and marked as reviewed.
e. Lab Tools – tools to enter data for adult mosquito trapping (species, abundance, pooling, lab results), larval samples, and other sample collections (blood or specimen samples).
f. Product Inventory – tools to view current on-truck inventory, record transfers, reconcile inventory counts, and review inventory transactions.
g. Reports – shortcut to the SQL Server Reporting Services landing page.
h. Edit ULV Sessions – tools for finding and editing ULV spray session information (only available with ULV extension).
i. View ULV Activity – tools for filtering the display of ULV spray data (only available with ULV extension).
j. Proposed Treatment Areas (Supervisors only) – tools to review proposed treatment areas created in the field or in the Web app. Results can be edited, deleted, treated, marked as completed, or exported to a shapefile.
k. Configuration (Supervisors only) – tools for configuring pick lists, technicians, chemicals, equipment, and other program settings.

2. Base Map Switcher. Click to expand or collapse the base map switcher. Select between several different Esri basemaps.

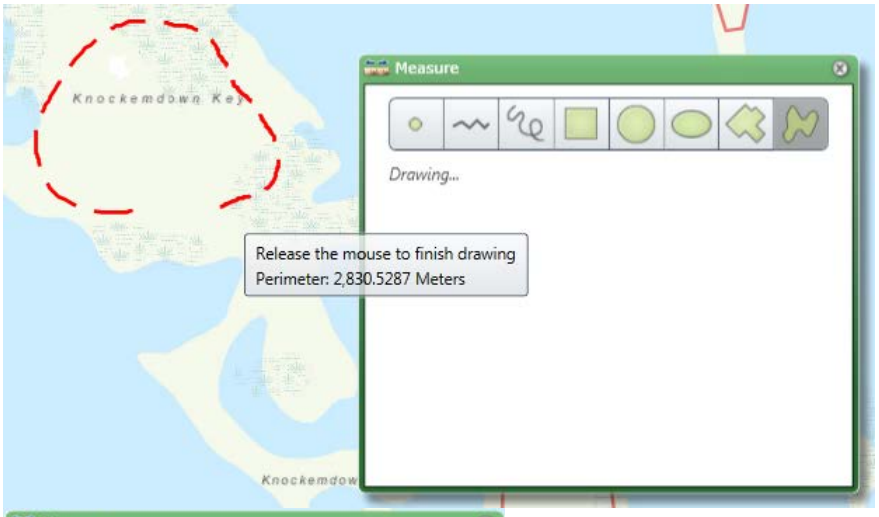

3. Toggle Map Contents. Click to show or hide. Layer display can be turned on or off.

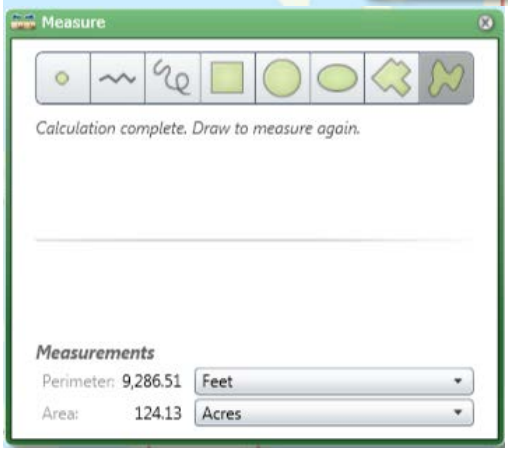



4. Overview Map. Click to show or hide.



5. Measure Tools. Click to activate, then select the measurement tool and follow instructions on the screen.

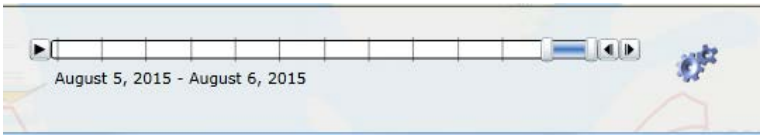



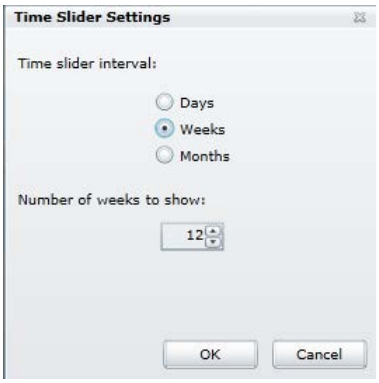

6. Create Location. Click to activate, choose the feature type, then start drawing on the map. For line or polygon features, click to add vertices then double-click to finish. Enter attributes and save.


7. Create Activity. Click to activate, choose the activity type (larval inspection, treatment, landing count, sample, trap), select the location to record the activity for, then enter activity details.

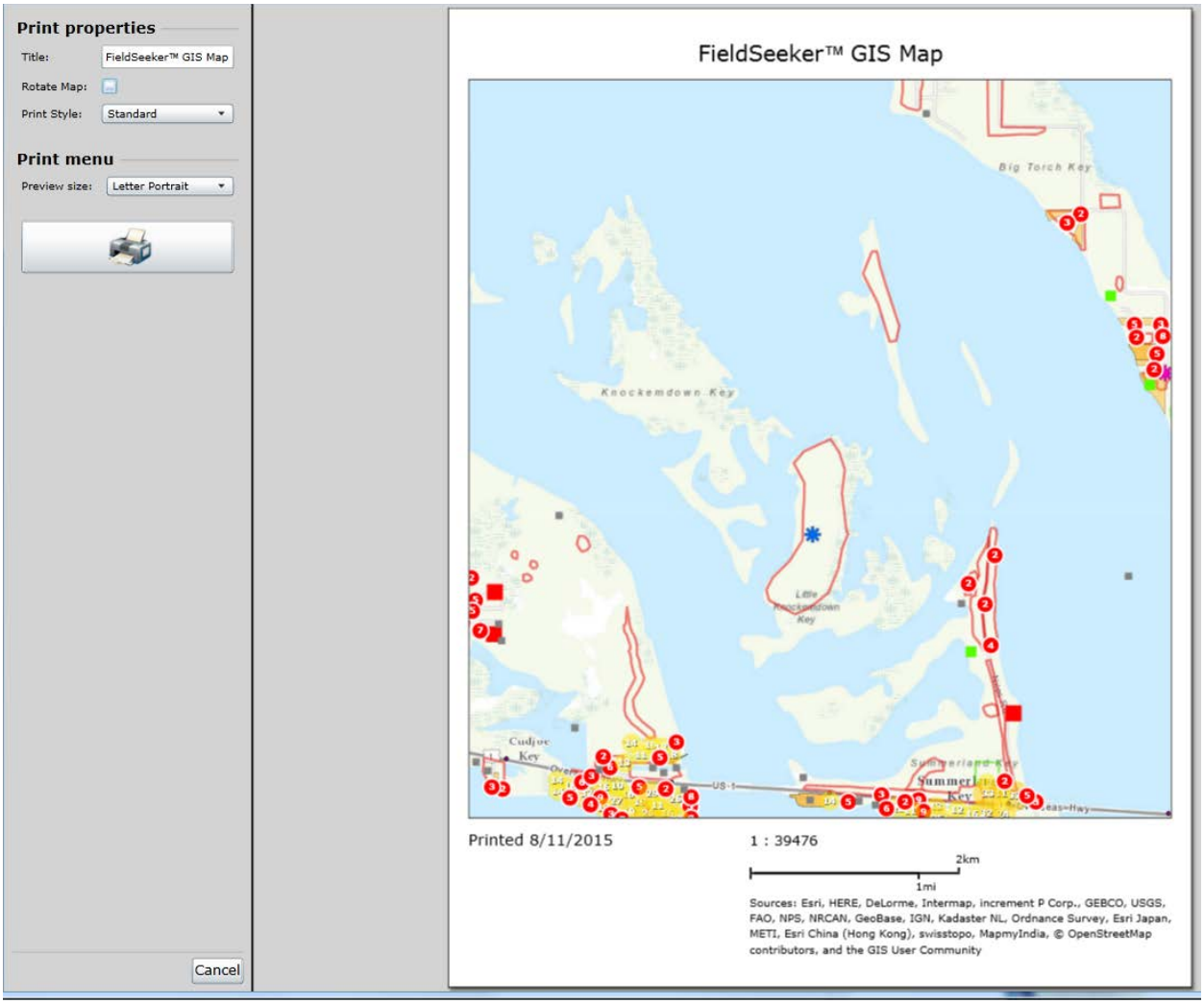

8. Search. Click to activate, enter an address or a place name, and press enter to zoom to that location on the map. The address search uses Esri World Geocoder service.


9. Time Slider. Click to activate. Click Settings to change time interval. Use slider controls to display time-enabled data for given time intervals.

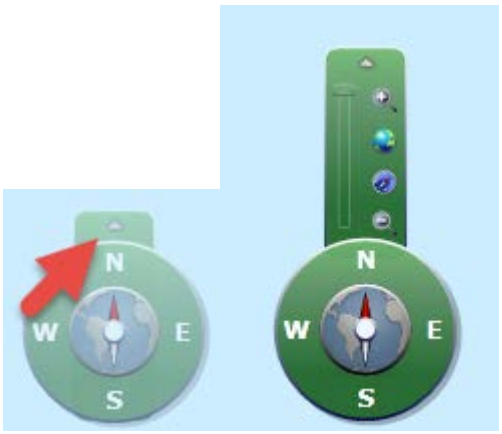


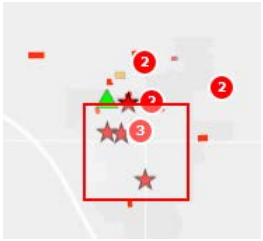
10. Print Map. Click to activate. Set page size and map title. Zoom in or out on the map to position.




11. Map Navigator. Hover over controls to learn their purpose. Click on any compass heading to pan the map in that direction. Click the red map orientation arrow and drag to any compass heading to rotate the map. Click the up arrow to show more tools: zoom in, zoom extents, reset map rotation, zoom out, and on the left a zoom slider control.

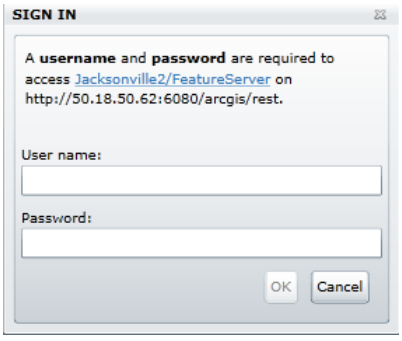



In addition to the Map Navigator tool, use your mouse or keyboard to navigate. For example, click and drag the map or use keyboard arrow keys to pan. Use the mouse wheel to zoom in or out. Hold Shift then click and drag a box to zoom in.



## Log In

If the ArcGIS services are secure services, you will be prompted for a login. If your organization is using Windows logins, you will enter your domain + username in “User name,” e.g. elecdata\chadm.




If the user name and password is authentic, the main map will display. If not, the application simply will not load.

Depending on whether your role is Technician or Supervisor, some options may be hidden from you in the main map.

If your User name matches a user name in the Technicians list, any work you enter in the Web app (new requests, new locations, new activities) will automatically default to your name. If there is no match, or security is not enabled, all work will be tagged with “Web User.”

For more information on configuring users and logins, refer to the *FieldSeeker Implementation Guide,* available from Frontier Precision.

## Configuration

This option is only available to supervisors. Configure pick lists, technicians, products, laboratory information, mosquito species, ULV sprayer details (only visible if ULV extension is installed), service request fields, user-defined, fields, UI settings, and general configuration settings. Changes made apply everywhere in the Office/Web and mobile applications.

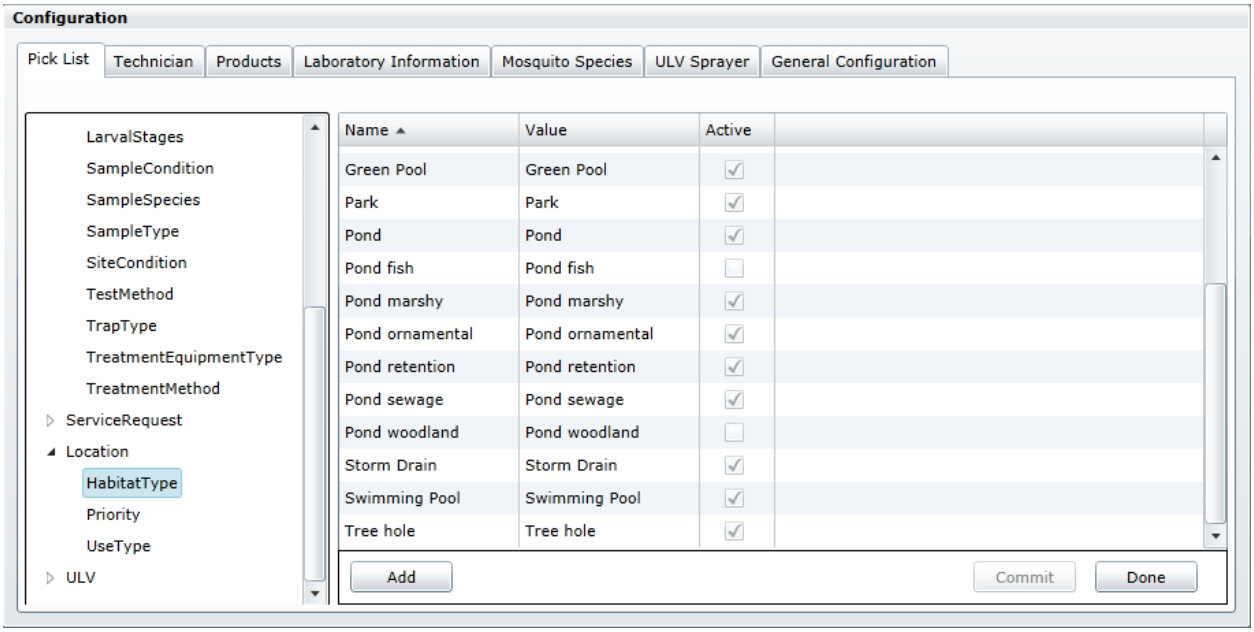
Before using the software, it is important to set especially the following:

- Pick List
  - Inventory
  - Service Request – Region
- Technician list
- Products list

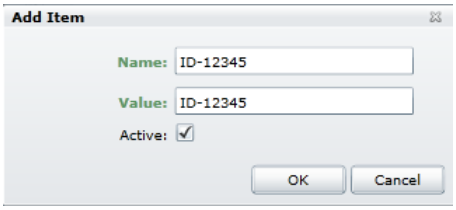
It is recommended that you look through all of the pick lists and make changes where needed. You can always come back later and make more changes.

### Pick List

Select the category (Inventory, Location, Mosquito, ServiceRequest) then select the pick list to edit.



Press Add to create a new pick list entry. Type something for Name (this appears on the pick list for the user) and Value (this is stored to the database). Check the Active checkbox for the entry to show up on picklists in the software.



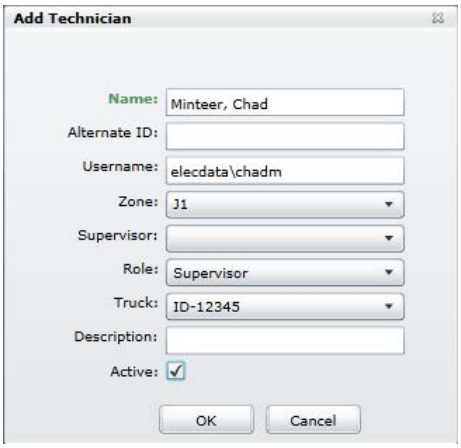

Press Edit to change an existing entry. Make an item inactive to remove it from picklists for new data entry. (Inactive pick list items will still be displayed when searching for historical data or when running reports.)

Existing items cannot have both Name and Value changed. Make the item inactive and create a new item instead.

Items cannot be deleted. Make items inactive instead.

## Technician

Similar to pick lists, add new entries, edit existing ones, or make entries inactive.




Name is the only required element.

Alternate ID could be a license or operator number, or an employee ID number.

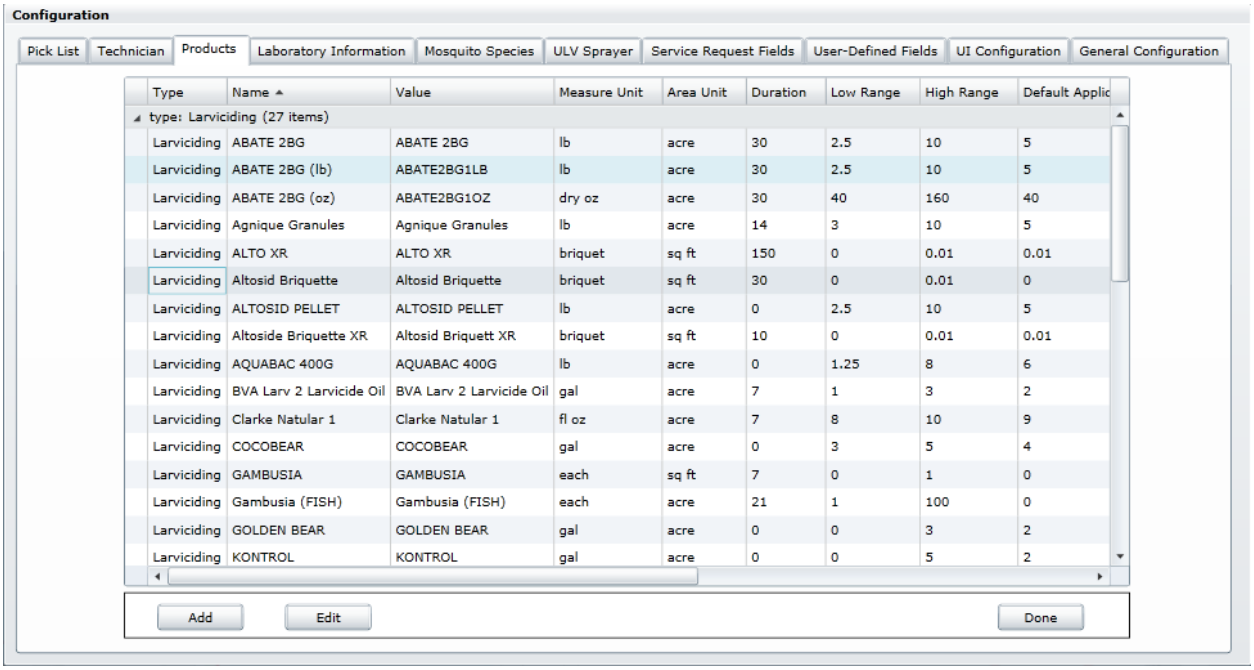
If you are using ArcGIS Server security, the Username entered here should match the username in ArcGIS Server security settings. For example, if ArcGIS Server uses Active Directory for its user store, your username should be entered here as domain\user, e.g. “elecdata\chadm.”

If you would like to automatically assign service requests in a particular zone to a particular person, set the Zone entry. If you set the Supervisor entry, the service request will also have that value set automatically.

The Role selection is used to determine what names show up on the Supervisor drop-down.

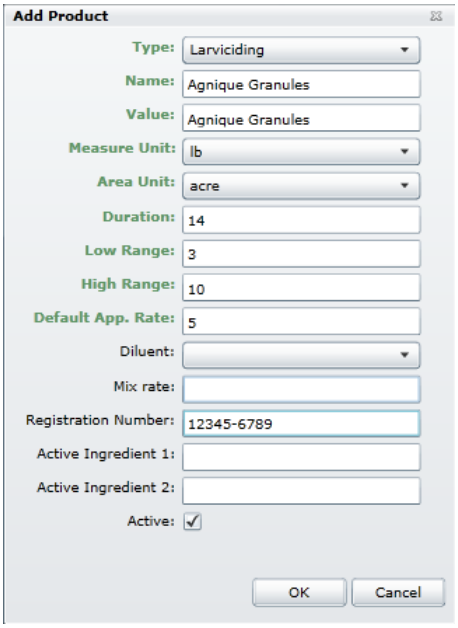
If the user is assigned to a particular vehicle, set the Truck entry (configure this list in Pick List > Inventory > Vehicle). When the user logs in to the mobile app, it will verify that they have selected the correct vehicle.

## Products




| Type | Name | Value | Measure Unit | Area Unit | Duration | Low Range | High Range | Default Applic |
|---|---|---|---|---|---|---|---|---|
| type: Larviciding (27 items) | | | | | | | | |
| Larviciding | ABATE 2BG | ABATE 2BG | lb | acre | 30 | 2.5 | 10 | 5 |
| Larviciding | ABATE 2BG (lb) | ABATE2BG1LB | lb | acre | 30 | 2.5 | 10 | 5 |
| Larviciding | ABATE 2BG (oz) | ABATE2BG1OZ | dry oz | acre | 30 | 40 | 160 | 40 |
| Larviciding | Agnique Granules | Agnique Granules | lb | acre | 14 | 3 | 10 | 5 |
| Larviciding | ALTO XR | ALTO XR | briquet | sq ft | 150 | 0 | 0.01 | 0.01 |
| Larviciding | Altosid Briquette | Altosid Briquette | briquet | sq ft | 30 | 0 | 0.01 | 0 |
| Larviciding | ALTOSID PELLET | ALTOSID PELLET | lb | acre | 0 | 2.5 | 10 | 5 |
| Larviciding | Altoside Briquette XR | Altosid Briquett XR | briquet | sq ft | 10 | 0 | 0.01 | 0.01 |
| Larviciding | AQUABAC 400G | AQUABAC 400G | lb | acre | 0 | 1.25 | 8 | 6 |
| Larviciding | BVA Larv 2 Larvicide Oil | BVA Larv 2 Larvicide Oil | gal | acre | 7 | 1 | 3 | 2 |
| Larviciding | Clarke Natular 1 | Clarke Natular 1 | fl oz | acre | 7 | 8 | 10 | 9 |
| Larviciding | COCOBEAR | COCOBEAR | gal | acre | 0 | 3 | 5 | 4 |
| Larviciding | GAMBUSIA | GAMBUSIA | each | sq ft | 7 | 0 | 1 | 0 |
| Larviciding | Gambusia (FISH) | Gambusia (FISH) | each | acre | 21 | 1 | 100 | 0 |
| Larviciding | GOLDEN BEAR | GOLDEN BEAR | gal | acre | 0 | 0 | 3 | 2 |
| Larviciding | KONTROL | KONTROL | gal | acre | 0 | 0 | 5 | 2 |

Similar to pick lists, add new entries, edit existing ones, or make entries inactive.




Larviciding products require name, value, measurement unit, area unit, duration, low range, high range, and registration number. The low and high range are used to validate treatment entries (quantity and area). The duration is used to calculate the next inspection date. Enter a Default App. Rate to have treatment area automatically calculated from application amount on the mobile.

Adulticiding products require name, value, diluent, mix rate, registration number, and active ingredient (lbs/gallon).

## Laboratory Information

Similar to pick lists, add new entries, edit existing ones, or make entries inactive. Lab information is used in lab tools to record which labs that samples or pools are sent to for testing.

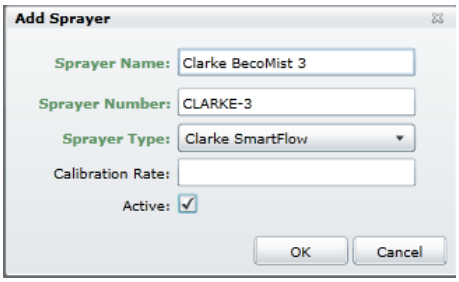
## Mosquito Species

Similar to pick lists, add new entries, edit existing ones, or make entries inactive. Additionally, select species for pooling.

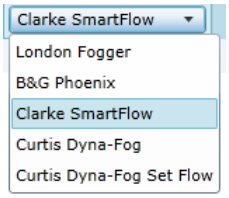
| Name | Alternate Name | Pool Use | Active |
|---|---|---|---|
| Cx. tarsalis | Cx. tarsalis | ☑ | ☑ |
| Ae. aegypti | Ae. aegypti | ☐ | ☑ |
| Oc. japonicus | Oc. japonicus | ☐ | ☑ |
| Ae. albopictus | Ae. albopictus | ☐ | ☑ |
| An. cucians | An. cucians | ☐ | ☑ |
| Cx. pipiens | Cx. pipiens | ☐ | ☐ |
| Cx. quinquefasciatus | Cx. quinquefasciatus | ☑ | ☑ |

## ULV Sprayer

(Only available if ULV extension is installed.) Similar to pick lists, add new entries, edit existing ones, or make entries inactive.




The following fogger types are supported:

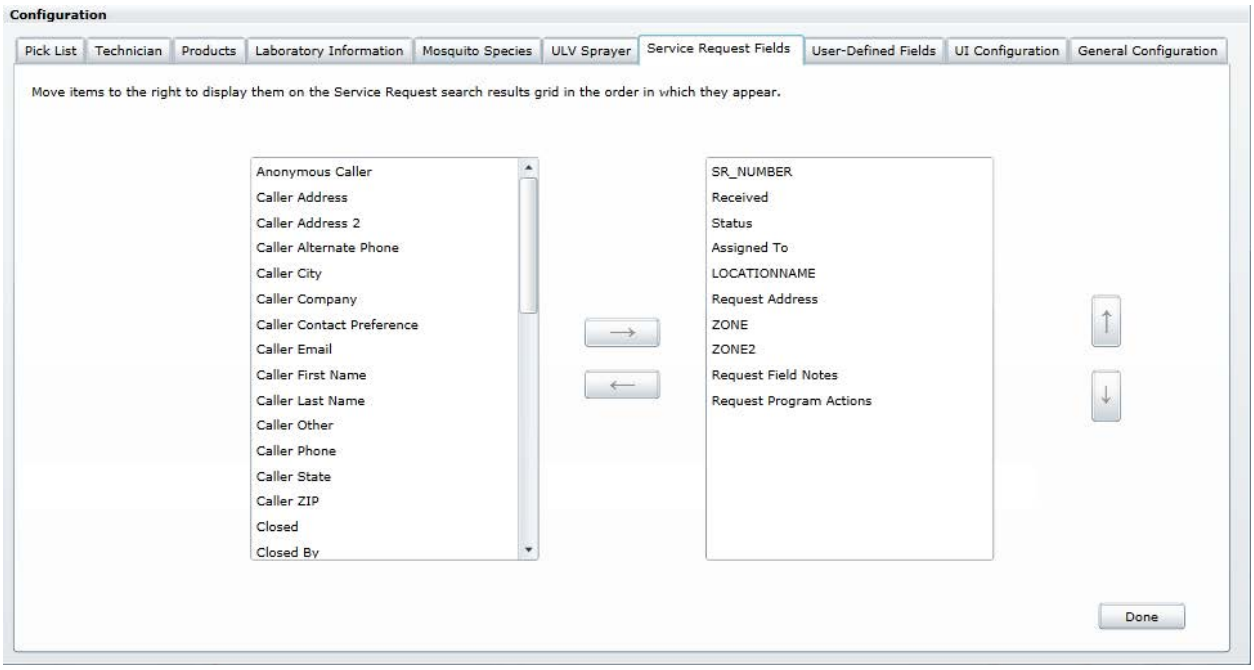



Enter an accurate calibration value for London Fogger, B&G Phoenix and Curtis Dyna-Fog Set Flow machines so that flow and volume calculations are accurate (they report a 'motor count' value to the software that has to be converted to a flow rate based on your entry here). Clarke SmartFlow and Curtis Dyna-Fog fogger types do not require a calibration value to be entered (they report a flow rate to the software). Consult manufacturer instructions for sprayer calibration procedures. *If you do not calibrate the sprayer properly, the total chemical use that is reported to and recorded by FieldSeeker will not be accurate.*

## Service Request Fields

Move items to the right to display them on the Service Request search results grid in the order in which they appear.

Note: these changes apply only to the current user and are not global for everyone.

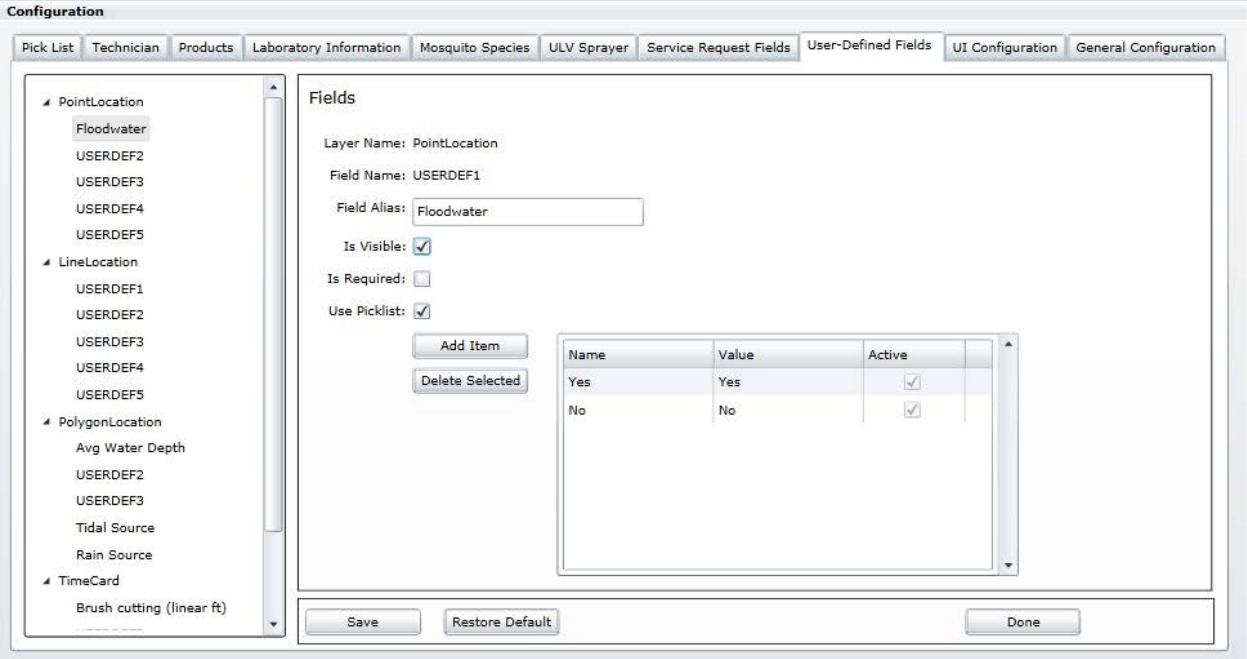



## User-Defined Fields

For point, line and polygon locations, and time card (Activities & Time activity type), you can configure up to 5 user-defined fields. This is to support recording additional data not already included in the location edit forms or time card entry.

To make changes, select the user-defined field on the left. Field Alias is the prompt that the user will see. Check the boxes to make the field visible, optionally make it required, and whether to use a picklist. If picklist is selected, add items to the picklist.

Press Save to save changes. Changes will apply on the Web app and mobile app for data entry and search screens.

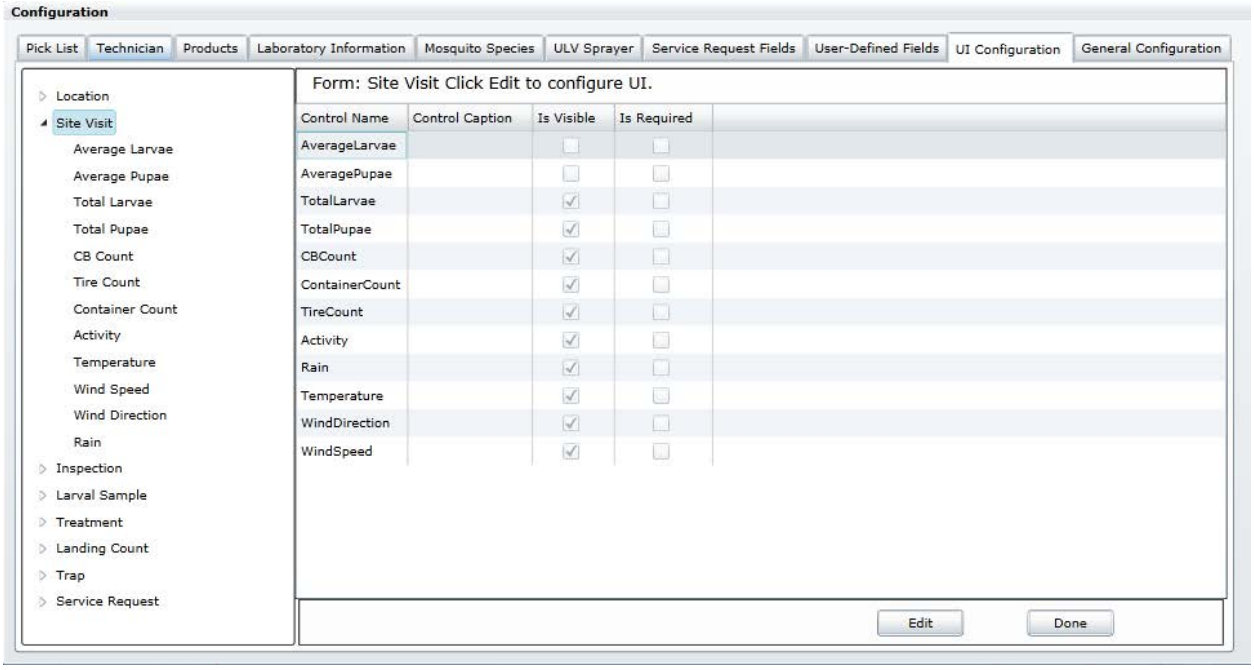


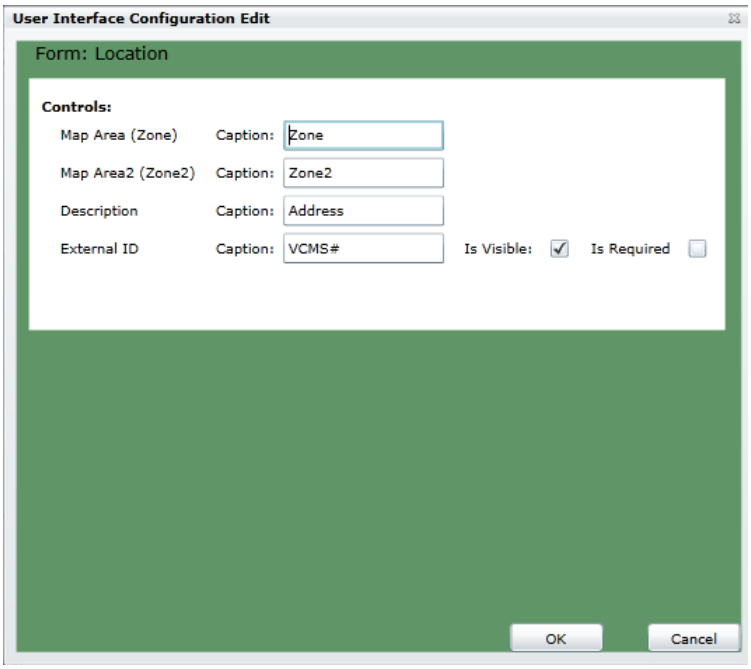

Press Restore Default to set all user-defined field settings back to defaults.

## UI Configuration

For most data entry forms, you can show or hide various fields, change the caption, and make them required.

Select the form to change, then press Edit.


Configuration
Pick List
Technician
Products
Laboratory Information
Mosquito Species
ULV Sprayer
Service Request Fields
User-Defined Fields
UI Configuration
General Configuration
Location
Site Visit
Average Larvae
Average Pupae
Total Larvae
Total Pupae
CB Count
Tire Count
Container Count
Activity
Temperature
Wind Speed
Wind Direction
Rain
Inspection
Larval Sample
Treatment
Landing Count
Trap
Service Request
Form: Site Visit Click Edit to configure UI.
Control Name
Control Caption
Is Visible
Is Required
AverageLarvae
AveragePupae
TotalLarvae
TotalPupae
CBCount
ContainerCount
TireCount
Activity
Rain
Temperature
WindDirection
WindSpeed
Edit
Done


User Interface Configuration Edit
Form: Location
Controls:
Map Area (Zone)
Caption:
Zone
Map Area2 (Zone2)
Caption:
Zone2
Description
Caption:
Address
External ID
Caption:
VCMS#
Is Visible:
Is Required
OK
Cancel

## General Configuration

The following settings can be configured:

- Default Inspection Interval – number of days for default larval inspection interval. New locations default to this inspection interval, but each location has its own interval that can be adjusted separately
- Default Mosquito Pool Size – number of mosquitoes to include in an individual pool
- Default Landing Count Duration – default number of seconds for a mosquito landing count
- Location Proximity Distance – distance in feet. This distance is used anywhere a location proximity search is performed, including searching for existing locations within a distance of a geocoded address when creating a new service request and searching for existing locations within a distance of GPS when creating a new activity record on the mobile
- Auto Mosquito Treatment – true or false
- No Spray Warning Distance – distance in feet
- History Days Limit - number of days of history to send back to mobile device
- Mobile History Sync – true or false (applies only to Windows Mobile software) REMOVE
- Default Service Request Region – set default value for new service requests
- Tracklog Refresh Interval – number of seconds between tracklog points (recorded on mobile software)
- Restricted Area Interval – number of seconds between checks for proximity to restricted areas (mobile software checks this)

# Create Locations

Everything in FieldSeeker is connected to a location. This includes regularly scheduled activities such as mosquito inspections and treatments, and “on-demand” activities such as setting or retrieving traps, collecting samples, or recording landing counts. It also includes a customer complaint or service request and its related activities.

A Location can be created in the Web app or on the mobile application. It can be drawn or GPSd as a point, line, or polygon. It could represent an address point, parcel, property or other boundary, field or water body or portion thereof, section of canal or ditch, or any other place where mosquito control activities take place and need to be recorded.

Locations can be active or inactive. Active locations participate in regularly scheduled activities such as recurring inspections (if they are assigned the Larval Source “role” – see below). Inactive locations do not. They are still displayed on the map but they are displayed in gray. Inactive locations can be made active at any time. For example, if a service request comes in for an address, a technician may visit the location, do an inspection, and record a treatment, but the location may not be considered a permanent source, so the location can be made inactive. Maybe another service request comes in for the same location some time later, and the location is now considered a permanent source to be regularly visited for a period of time. The location can be made active and it will again participate in regularly scheduled activities.

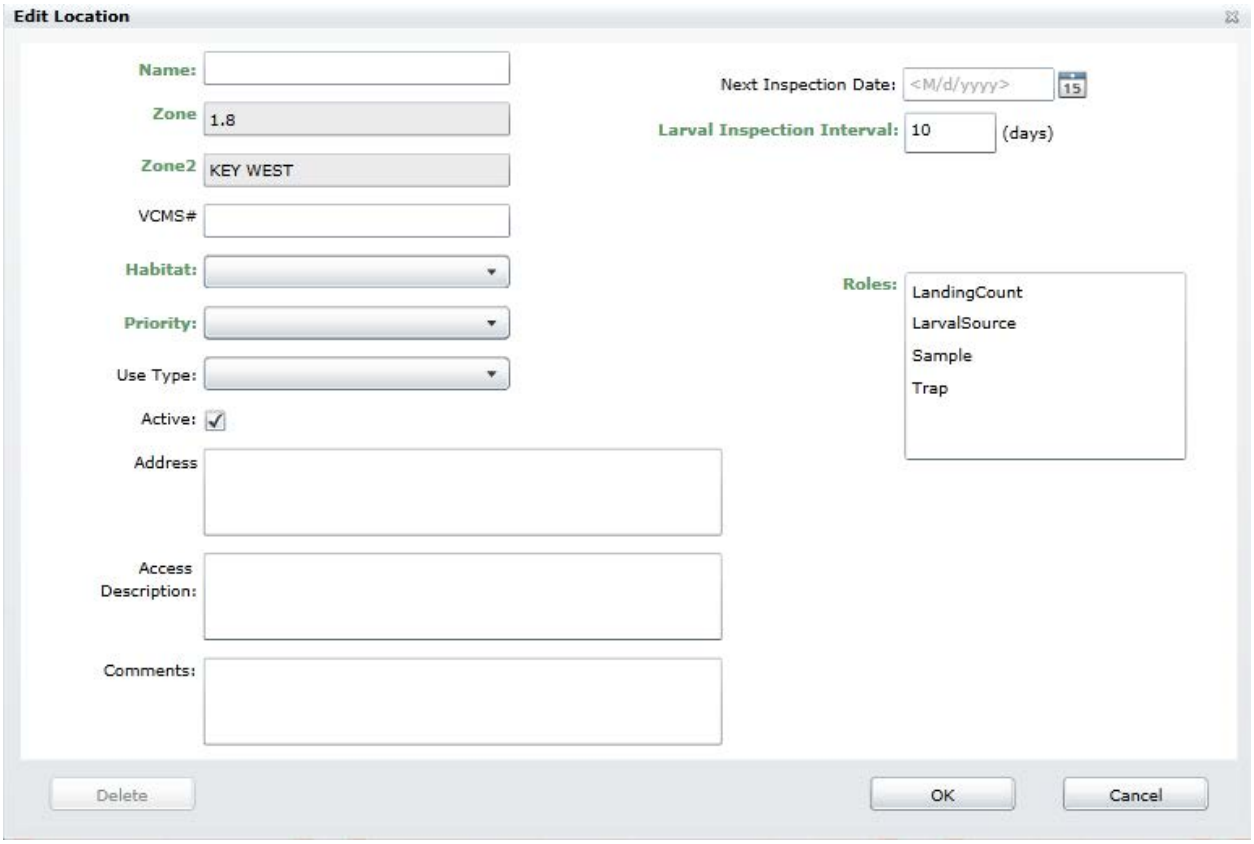
Each location can have one or more “roles.” These roles specify what kind of activities can be recorded for a location, and whether the location is automatically scheduled for inspections.

- Larval Source – this location type can have mosquito inspections, larval samples, and treatments recorded, and it participates in regularly scheduled activities (regular mosquito inspections). FieldSeeker will schedule the location to be inspected in one of the following ways:
    - The Larval Inspection Interval specified for the Location. If an inspection is recorded and no treatment is performed, the next inspection date is scheduled as today + the larval inspection interval.
    - If a treatment is recorded, the next inspection date is scheduled as today + the product duration.
    - The next inspection date can be manually set.
- Landing Count – this location type can have Landing Counts recorded. The Landing Count activity is considered an “on demand” activity because the schedule may vary by time and place.
- Sample – this location type can have Samples recorded (blood or specimen samples). The Sample activity is considered an “on demand” activity.
- Trap – this location type can have Trap set/retrieve surveys recorded. The Trap activity is considered an “on demand” activity because the schedule may vary by time and place.

To create a new Location, click the Create Locations tool.

Choose the Location Type. (Scroll down to see more location types.)


Draw the location on the map. If you selected line or polygon, double-click to end the sketch. The Edit Location dialog appears.




Enter information for the new location. Items in bold green are required.

- Name – type a name for the location, e.g. Smith Farm South Pasture, 1234 Maple Ave, 10N12E34-004, etc. Any location name is allowed, and name uniqueness is not enforced (you can have two locations named 1234 Maple Ave). The map display will help you to avoid duplicating locations – you will see existing locations on the map when you attempt to create a new one.
- Zone and Zone2 are automatically entered if the Map Area and Map Area2 layers are configured. If the Map Area layer is not configured, this attribute is blank.
- ExternalID (shown here as VCMS#) – this is an ID number from a legacy system.
- Habitat – choose from the pick list. Remember, all pick lists are configurable (see Configuration).
- Priority – choose from the pick list.
- Use Type – optionally choose from the pick list.
- Active – set active or inactive.
- Description, Access Description and Comments are optional and self-explanatory. (Description is shown here as “Address” – see UI Configuration.)
- Next Inspection Date – defaults to today’s date if Larval Source role is selected, but you can specify a future date. This date is modified and updated when field inspections or treatments are performed.
- Larval Inspection Interval – defaults to configured default larval inspection interval, but you can specify an interval for each location.

- Roles – select at least one role (explained above).

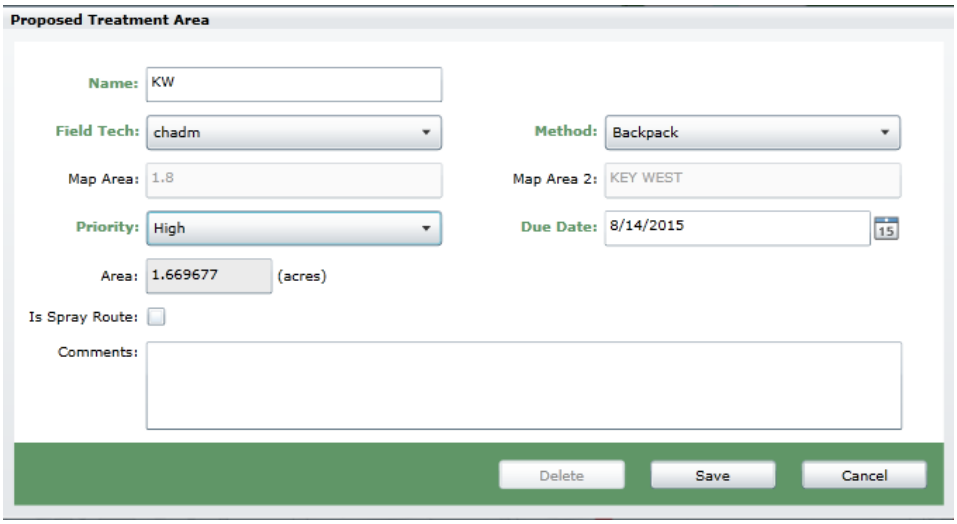
Line Locations also require an average width.  Polygon locations display an area.


## Special Location Types

In addition to basic point, line, and polygon locations where activities are recorded, there are a few special location types in the Create Location list.

### Proposed Treatment Areas

Proposed treatment areas can be created on the mobile device or in the Web application.  They represent areas where spraying needs to be done with aircraft or other equipment.




When creating a proposed treatment area, specify the area to be treated, the name of the area, the tech that created it, the method, priority, and due date.  Comments are optional.

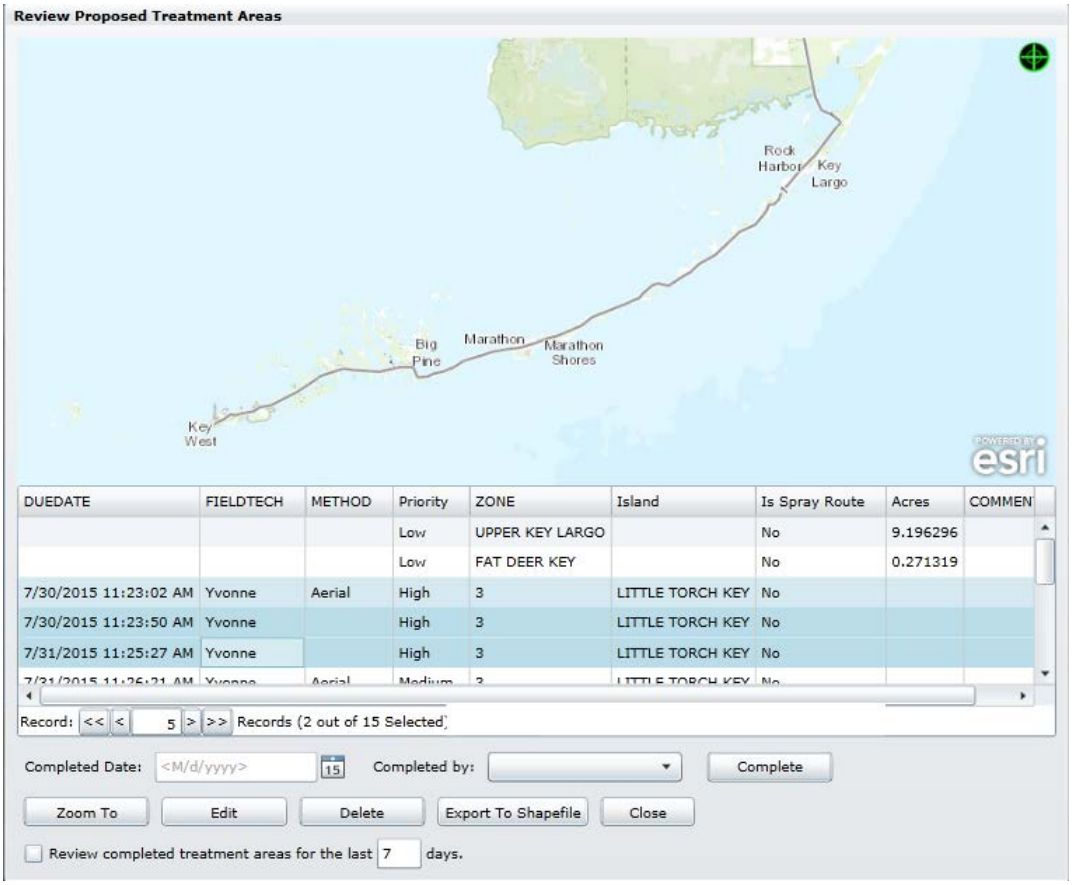
There are also tools on the mobile device to create a proposed treatment area, either from an entire spray block or by drawing in a smaller area for prescription spraying.

Existing proposed treatment areas can be reviewed and exported by going to the Main Menu > Proposed Treatment Areas.

### *Working With Proposed Treatment Areas*

Proposed Treatment Areas that have been created in the field or in the office are displayed in the Proposed Treatment Areas dialog.

Only Proposed Treatment Areas that are not already marked as completed will display here.

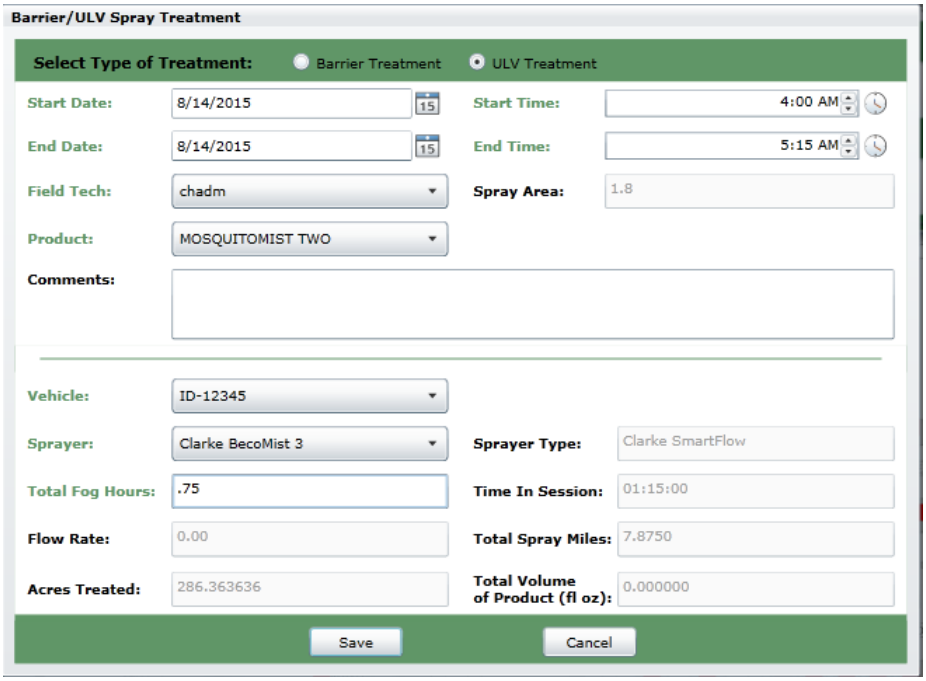



Proposed Treatment Areas can be selected from the list or the map. Select one or more records (hold Ctrl + or Shift + select) then take some action.

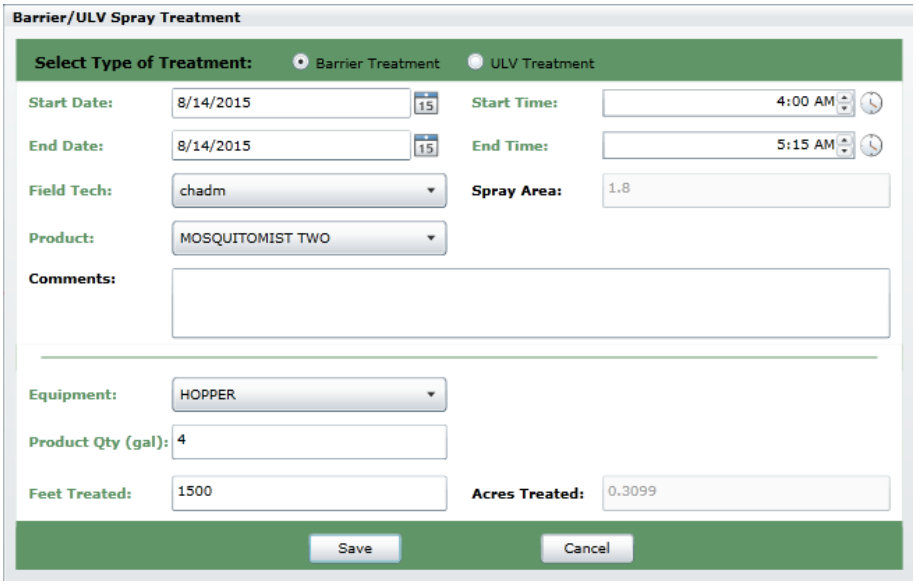
- Mark as Complete: set the Completed Date and select Completed by then click Complete to mark them as completed.
- Zoom To: zoom to the selected area(s)
- Edit: edit the selected area (only works if just one area is selected)
- Delete: delete the selected area(s)
- Export to Shapefile: generates a zipped shapefile for use in other systems
- Filter: check the box to only review proposed treatment areas created in the past X days

**Barrier / ULV Spray**

Barrier or ULV treatment areas can be drawn in on the Web or mobile application. (This is an optional feature, not available for all installations.)



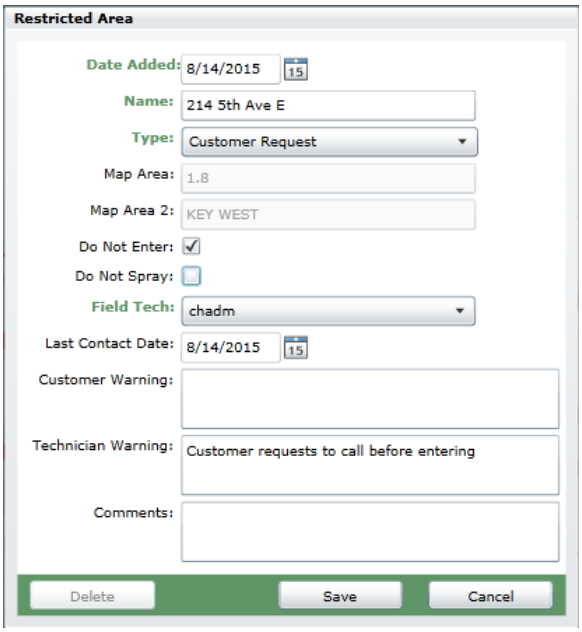

For a ULV treatment, draw in the area treated, specify the start and end date and time, field tech, product, sprayer, and total fog hours. Based on the flow rate and spray miles, the total volume and area treated is calculated automatically.



For a barrier treatment, draw in the area treated, specify the start and end date and time, field tech, product, equipment, linear feet, and product quantity, and the acres treated is calculated automatically.

**Restricted Areas**

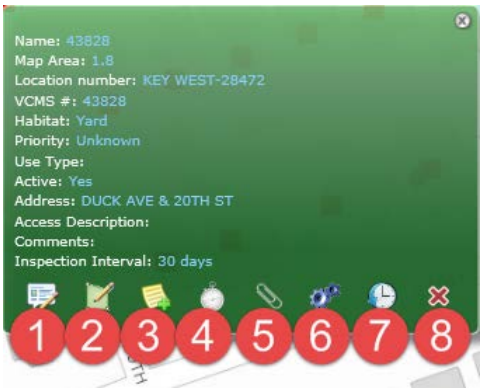
Restricted properties can be drawn in on the Web app (they cannot be created, edited, or deleted on the mobile app). Any special instructions, warnings, and the like can be recorded in these features.




The Technician Warning will automatically pop up on the field tech's mobile device when their GPS location is near the area.

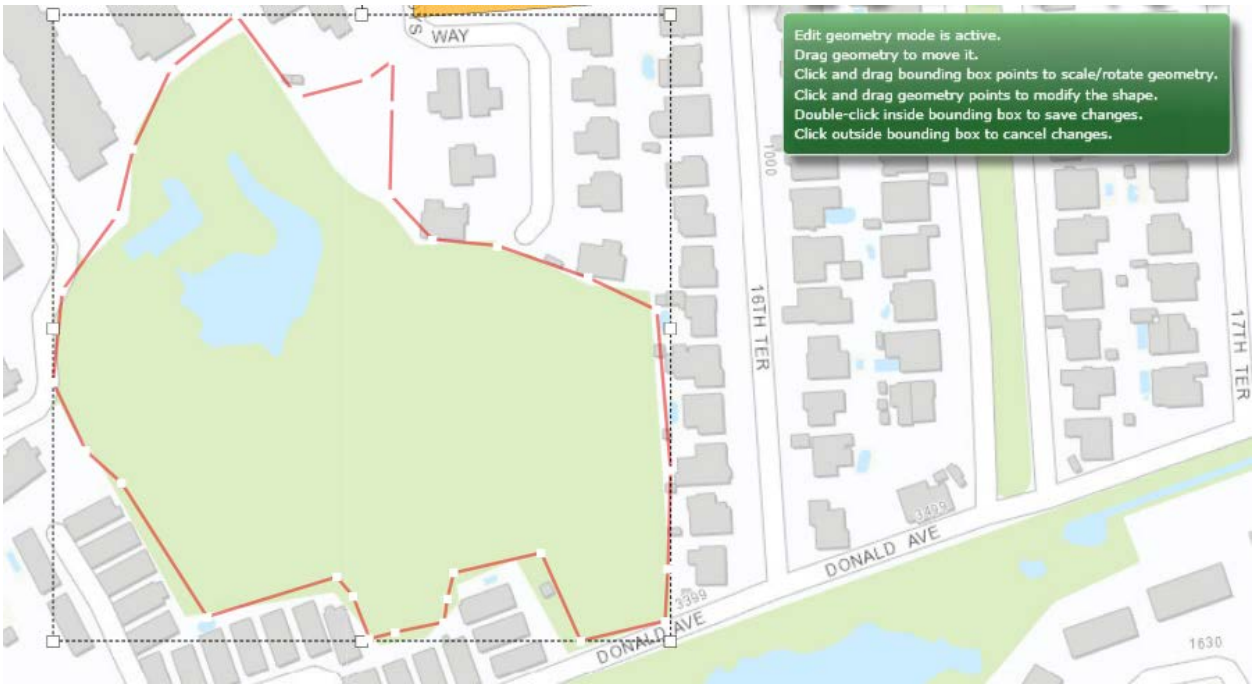
## Working With the Location Pop-Up

Click on an existing location to show the pop-up.

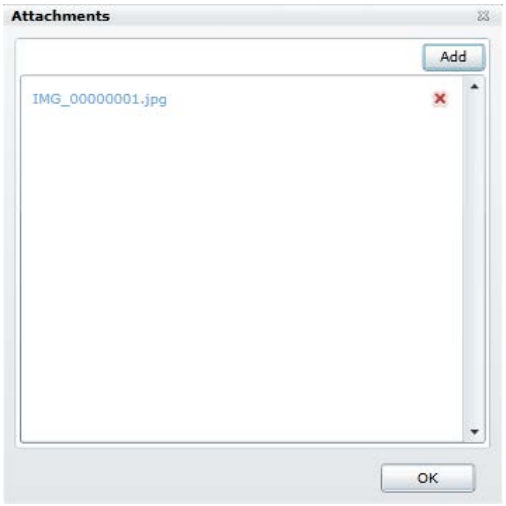



Various actions can be taken from the location pop-up.

1. Edit location attributes: make changes to any of the location attributes that are editable
2. Edit location geometry: move points, reshape lines or polygons. Follow on-screen instructions for making changes.

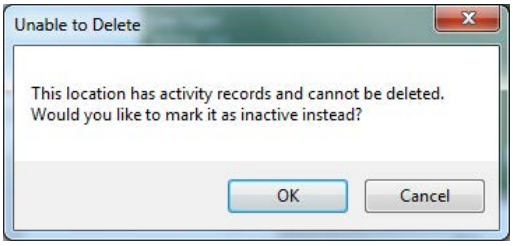



3. Add Service Request: add a service request to the selected location
4. Activities & Time: enter a “miscellaneous” time card entry for the selected location
5. Attachments: add picture attachments to the selected location




   a. Click Add to add pictures
   b. Click X to remove
   c. Click on the hyperlink to view the picture
6. Activities: enter an activity (Site Visit, Landing Count, Trap, Sample) for the selected location
7. History: search for historical activities for the selected location

8. Delete: delete location (only available for supervisors, not possible if there is existing work for the location)



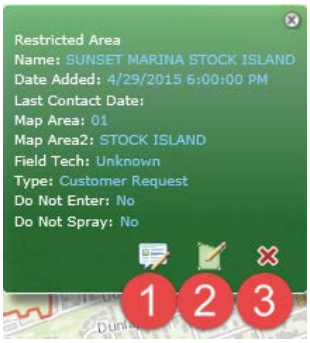

## Service Request Pop-Up

Click on a Service Request point (you may need to turn this layer on in the Map Contents, and turn off other layers such as the Point Location layer). From the popup, you can edit the request, close it, add attachments, enter activities, and assign to a technician.


1. Edit service request – click to modify request details.
2. Close request – click to mark the request as closed.
3. Add attachments – add picture attachments.
4. Create activity – add activity records for the request.
5. Assign to tech – click to assign the request to a technician.

## Restricted Area Pop-Up

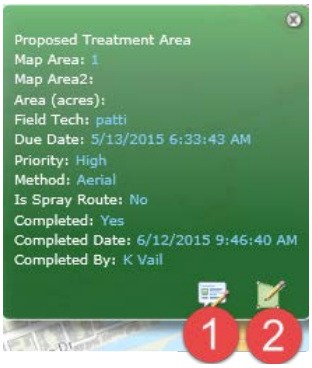
Click on a Restricted Area. From the popup, you can edit attributes, edit geometry, or delete.




1. Edit attributes – click to modify attributes. You can also delete features.
2. Edit geometry – click to reshape or move feature.
3. Delete (supervisors only) – click to delete feature.

## Proposed Treatment Area Pop-Up

Click on a Proposed Treatment Area polygon. From the popup, you can edit attributes or edit geometry.



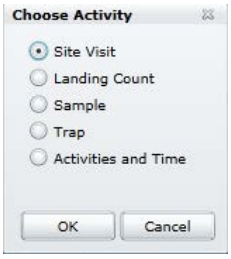

4. Edit attributes – click to modify attributes. You can also delete features.
5. Edit geometry – click to reshape or move feature.

# Record Activities

To record an activity for a location, you can select a location and enter the activity from the location pop-up as outlined above. Or, you can select the Create Activity tool on the main menu then click on the location where you want it recorded.

Activities are typically recorded in the field, but can also be entered in the Web application.

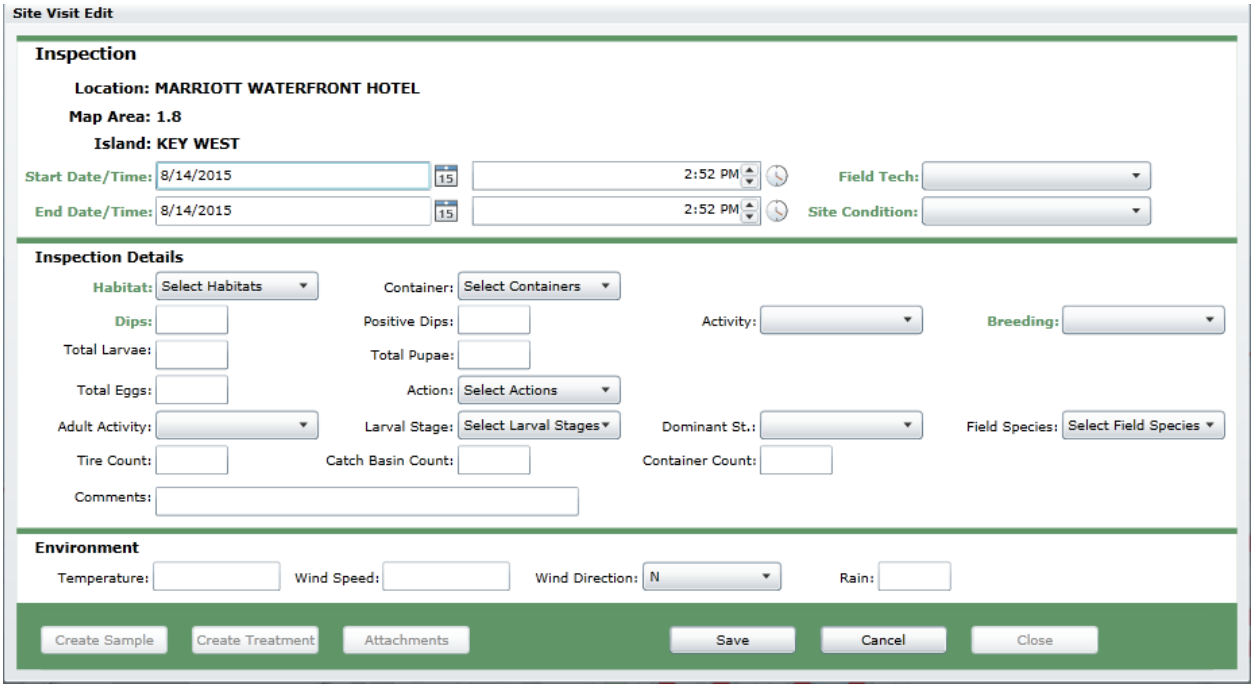
Select the activity type then press OK.




Then, click on an existing point, line, or polygon location on the map.

You can also record an activity by searching for a location first using Search Location, then Create Activity from the results page.

## Site Visit

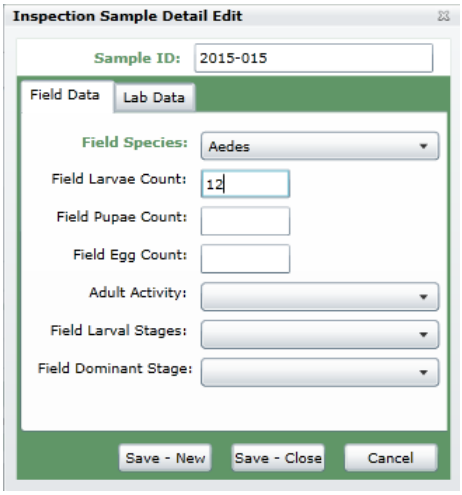



Items in bold green are required. Most items are self-explanatory. All pick lists are configurable.

After entering details for the inspection, press Save. After saving the inspection, you can select Create Sample, Create Treatment, and Attachments.

### Larval Samples

If you would like to record a larval sample, press Create Sample.

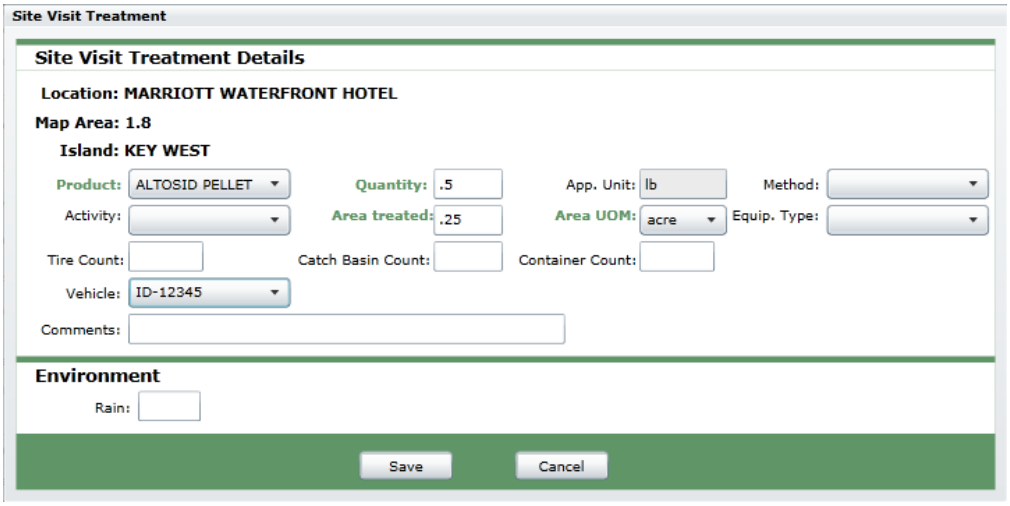



Enter a Sample ID and field species ID. Optionally enter field count information and adult activity. Press Save to record the larval sample. Create more sample records if you choose, to record other species

information for the same sample, or to record another sample for the same inspection. Many larval sample details can be entered or edited later from the Lab Tools interface also.

**Treatment**

To record one or more treatments, press Create Treatment.

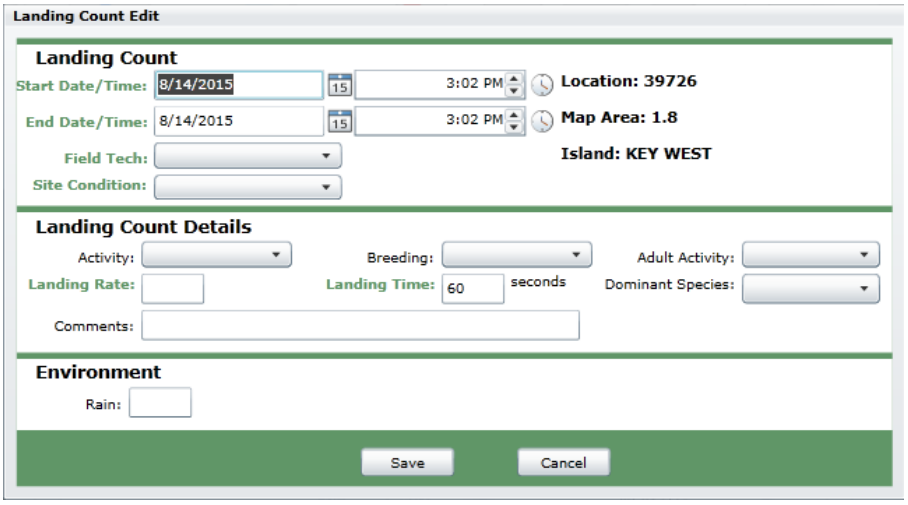



Items in bold green are required. Most items are self-explanatory. All pick lists are configurable.

Validation is performed to ensure that the product quantity compared to area treated does not exceed the minimum and maximum application rate specified in product configuration.

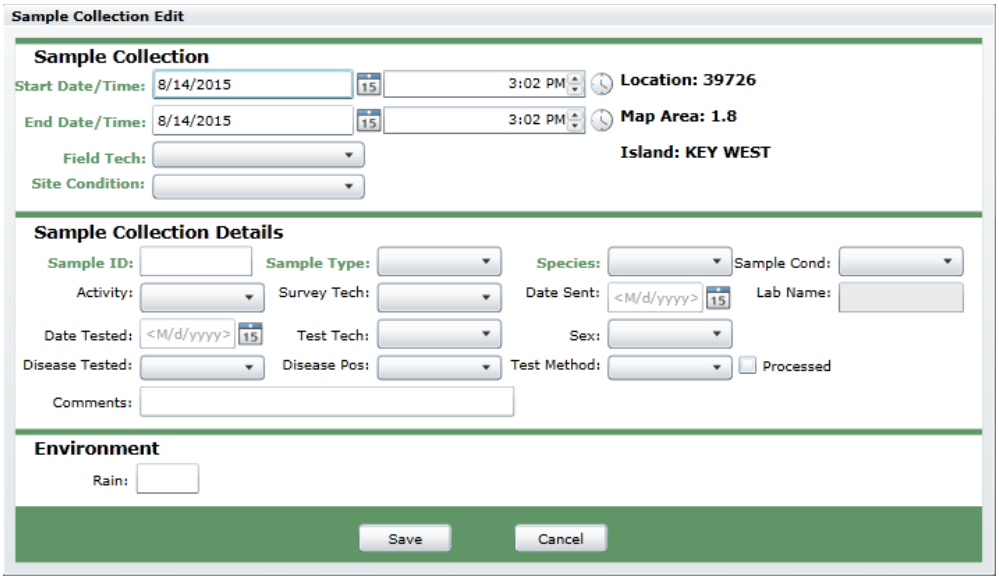
Specify the Vehicle if you want the treatment amount to be deducted from on-truck inventory for that vehicle.

## Landing Count




Items in bold green are required. Most items are self-explanatory. All pick lists are configurable.

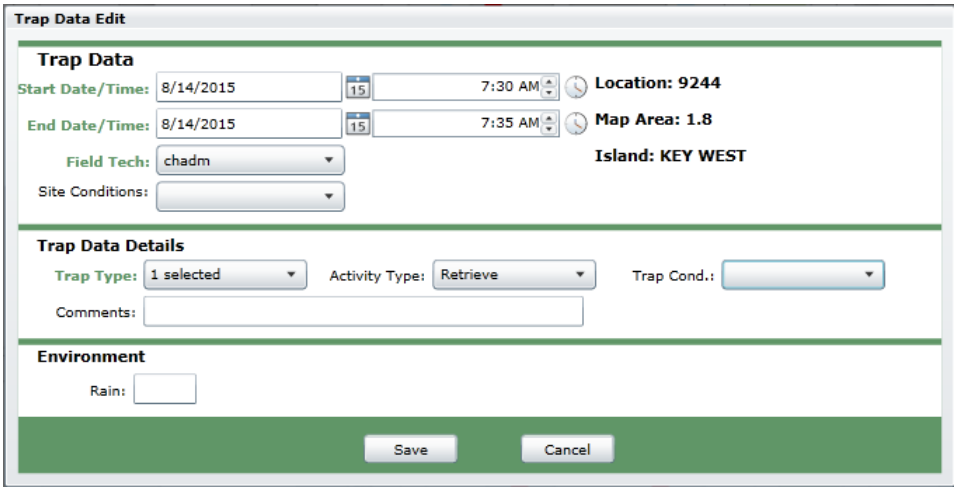
## Sample




Items in bold green are required. Most items are self-explanatory. All pick lists are configurable.

Many sample details can be edited or entered later from the Lab Tools interface also.

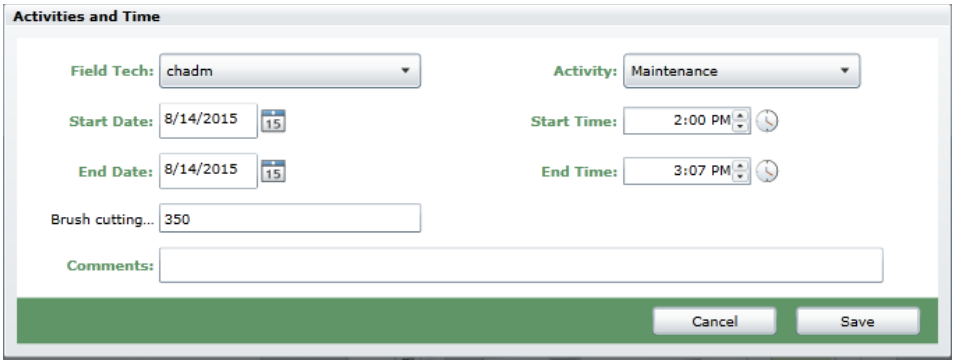
## Trap




Items in bold green are required. Most items are self-explanatory. All pick lists are configurable, except Trap Activity, which is “hard-wired” to Set or Retrieve. You can record a trap record for when a trap is set, and when it is retrieved; or you can just record a trap record for when the trap is retrieved.

To enter species and abundance data, create pools, and enter lab details for trap records, go to the Lab Tools interface. The “Retrieve” records will show up in the Adult Mosquito Trapping tab.

## Activities and Time




Items in bold green are required. Most items are self-explanatory. All pick lists are configurable. The example above has one of the user-defined fields configured to enter the linear feet of brush cutting.

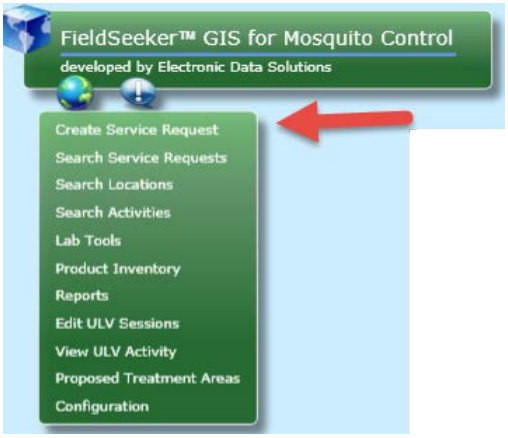
## Create Service Request

Service Requests can be created in the Web application or from an external Website using a GeoForm. They could also be created in another system such as CityWorks, Maximo, QAlert, or other call management or CRM systems. When Service Requests come into FieldSeeker, they all have a 'dot on the map' and they are all connected to a Location. When a new service request is created, you can choose to attach it to an existing location by clicking on the map, or you can enter an address and let the program search for existing locations and service requests in the vicinity of the geocoded address.

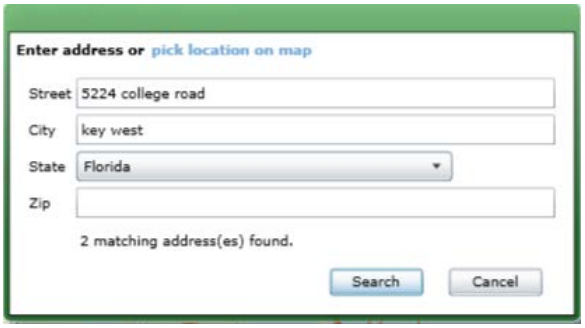
There are a few ways to create a service request:

1. Using the "Create Service Request" option shown below
2. Clicking a location on the map and creating a service request from the pop-up
3. Searching for an existing Service Request and Cloning it
4. Search for an existing Location and creating a service request for it

Click the main menu globe, and then click Create Service Request.



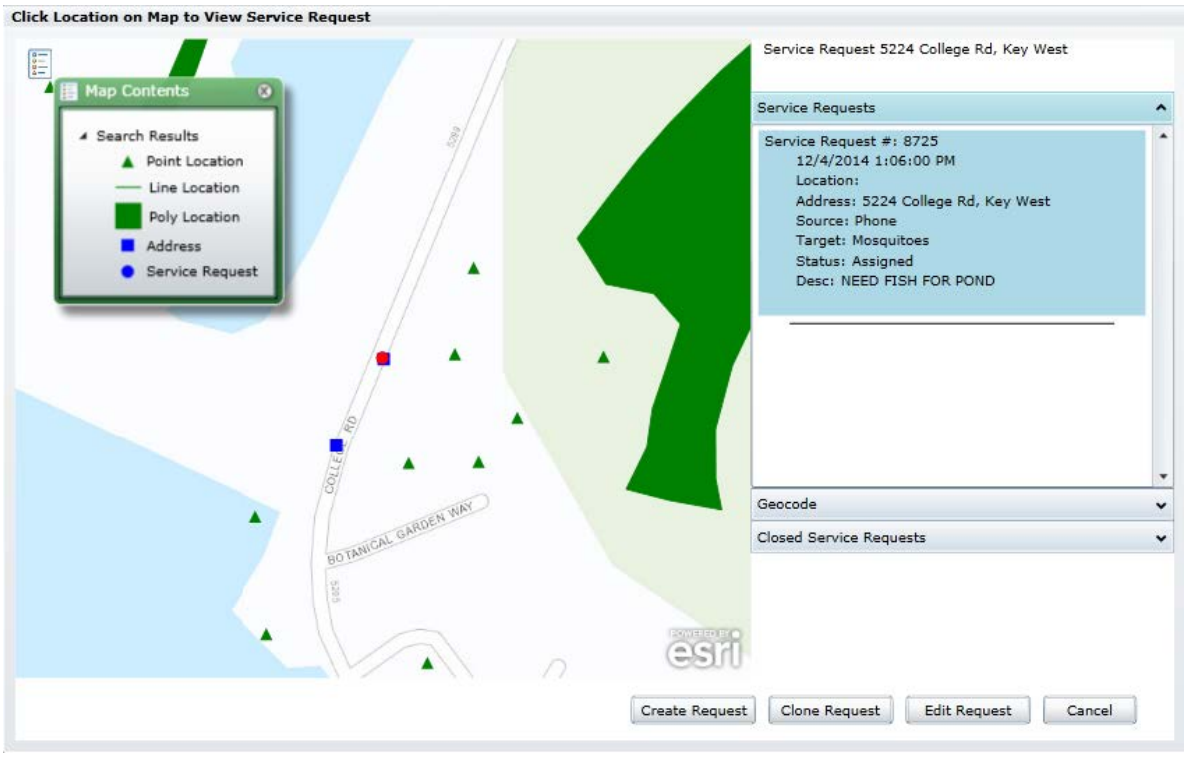
Type an address and press Search, or click “pick location on map.”




If you choose to pick a location on the map, FieldSeeker will search within the configured proximity (Configuration > General Configuration Options) for existing locations and service requests. It will display the map click as a reverse geocoded address point and existing locations and service requests on a mini-map.

If you type an address, FieldSeeker will geocode it then search within the configured proximity for existing locations and service requests.

All the nearby locations, service requests, and address matches are displayed.

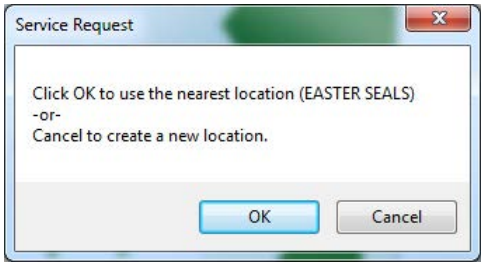



The mini-map will help you avoid duplicating service requests when multiple calls come in for the same problem area. It will also help eliminate issues with misspelling addresses, because when a geocoded address result is displayed, spelling and formatting errors are corrected.

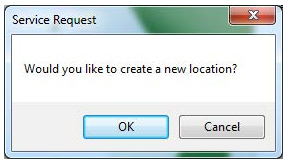
The mini-map is interactive.  Click on locations to see whether there are any open requests already attached to them or to view closed requests for them.  Click on open service requests to view details.  Click on address matches to view details (the address points are the geocoding results, which probably will display on the street rather than on the property).

To create a new request:

- Select a location and press Create Request
- Select an existing Service Request (closed or open) and press Clone Request
- Select an address and press Create Request
    - If a location exists within the configured search proximity, the request will be attached to it (after a prompt)

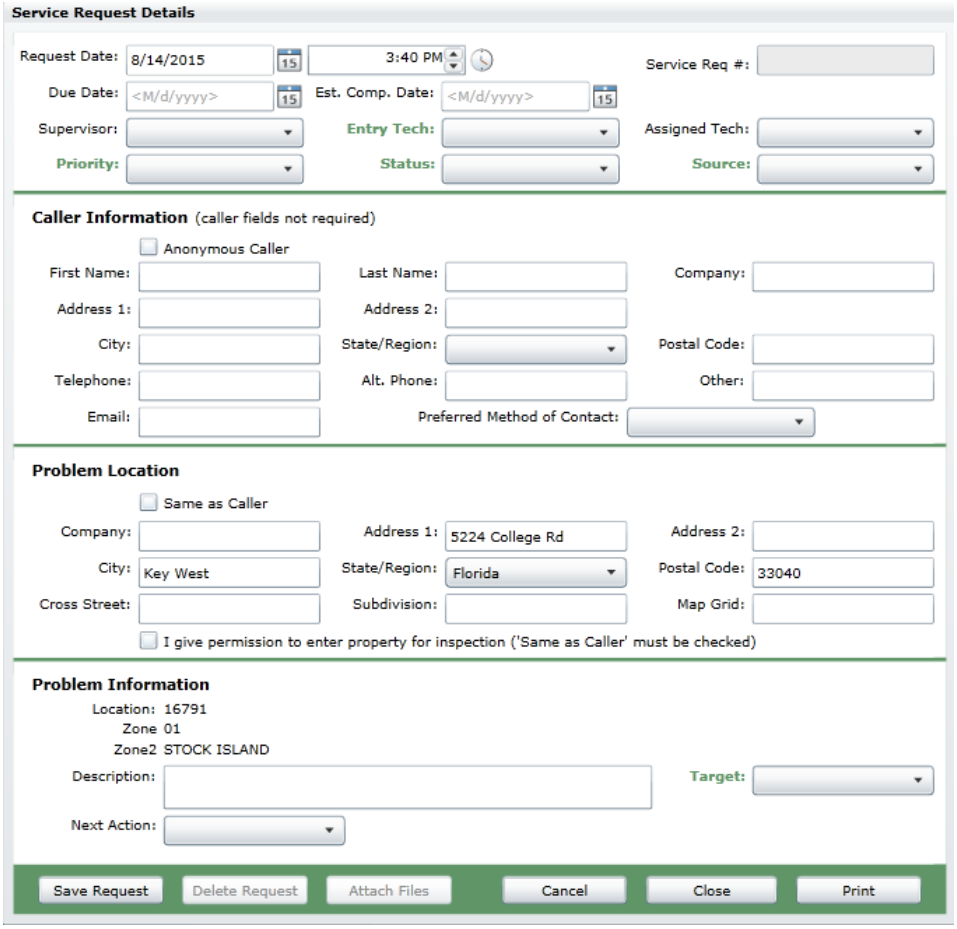



    - If no location exists within the configured search proximity, a new location will be created (after a prompt)




- Click anywhere on the map – if no location exists, a new location will be created (after a prompt)

When you create a new service request, as much information as possible is copied into the request.




Items in bold green are required. Most items are self-explanatory. Press Save Request and Attach Files will be enabled (picture attachments). You can also print the service request before closing.

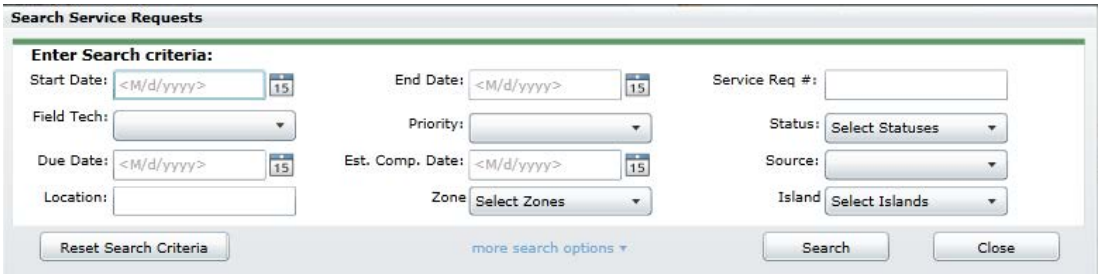
## Search Tools

Find service requests, locations or employee activities easily using the search and query tools. Search results can be reviewed, edited, and displayed on a map.

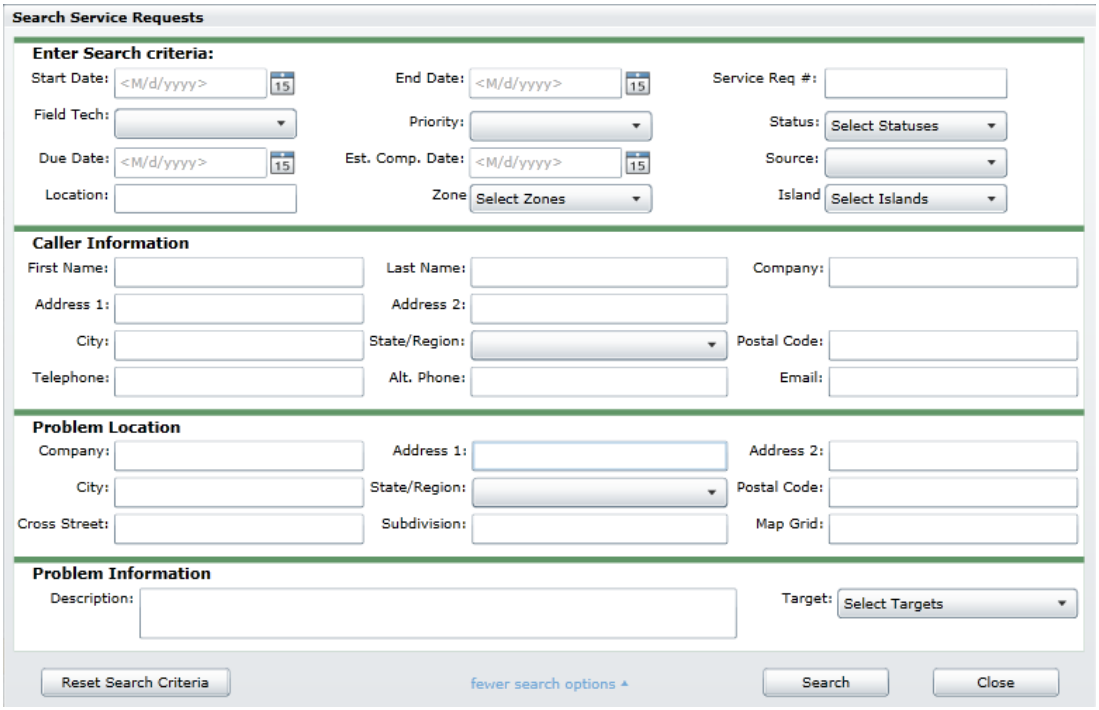
Use the search tools to review work for employees, find out the history of service requests at an address location, look at all of the activities for a service request or location, and so on.

## Search Service Requests

Search for service requests by date, SR#, technician, priority, status, zone, or any other attribute.

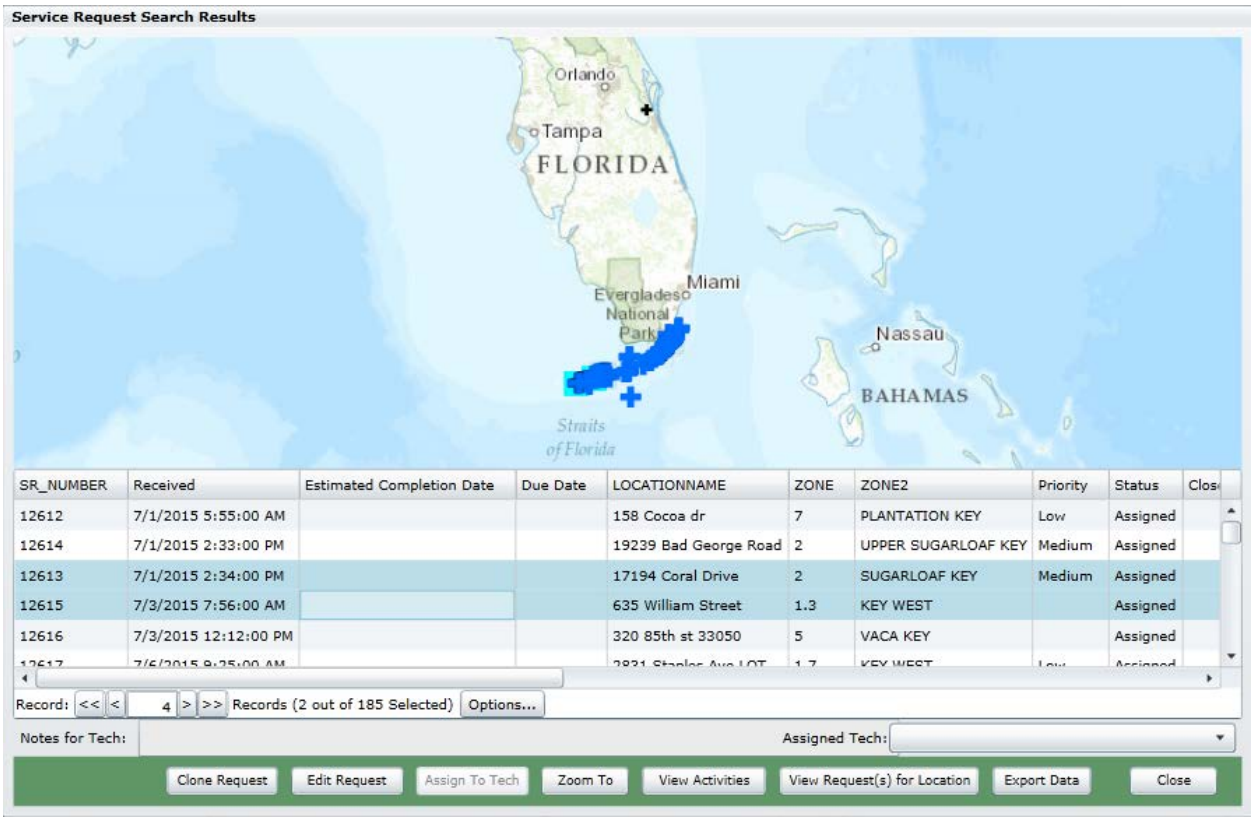



Some of the most commonly used criteria are presented first. To see others, click “more search options.”



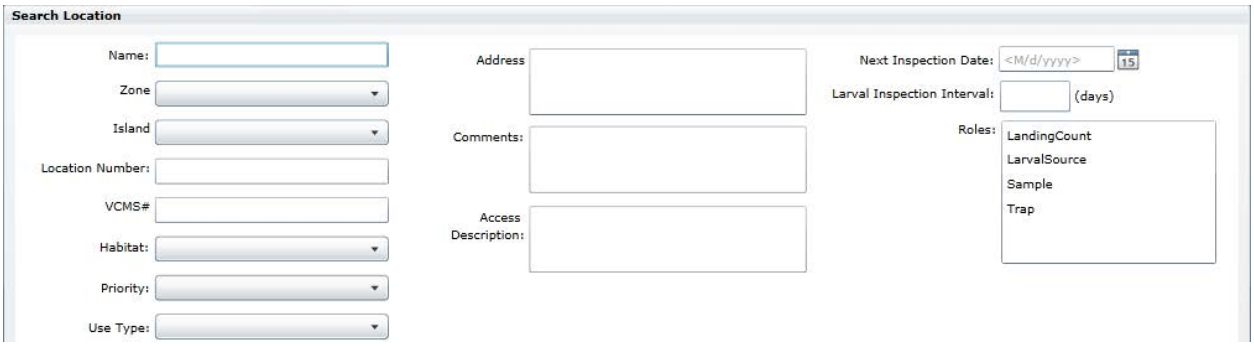

After finding requests, select one of more of them and then perform the following actions:

- Clone (select only one request) – copy service request details into a new request
- Edit (select only one request) – edit service request details
- Assign to Tech – select one or more request, choose “Assigned Tech” from drop-down, then click assign to Tech button
- Zoom To (select only one request) – zoom to the location for the selected request
- View Activities (select only one request) – view all activities performed for the selected request
- View Request(s) for Location (select only one request) – view past service requests for the location(s) that the selected request is connected to
- Export Data – export selected requests to a CSV file
- Close Request(s) – mark all selected requests as closed (you will be asked to confirm first)

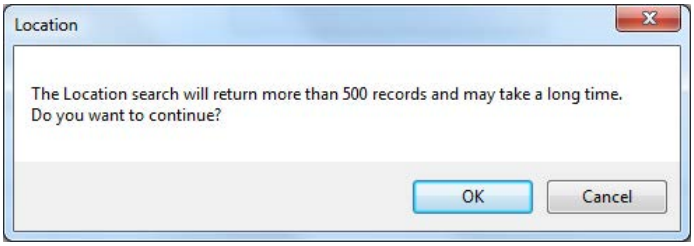



## Search Locations

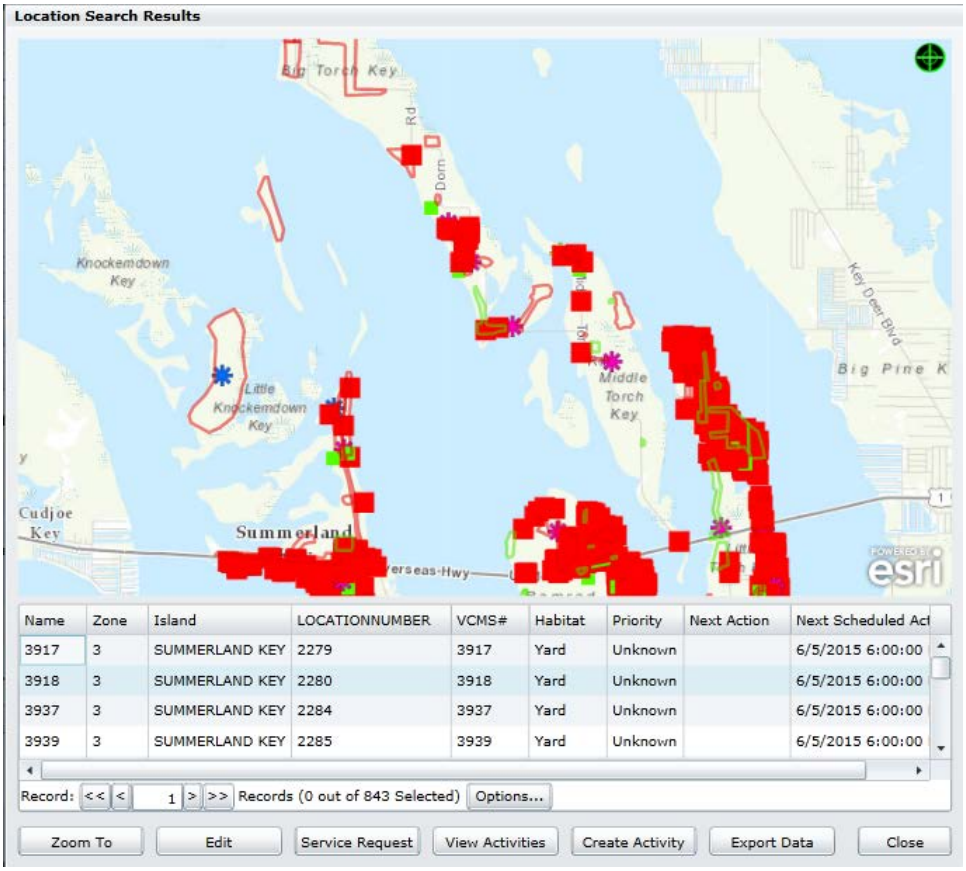
Search for locations by name, habitat, priority, role, or any other attribute, including user-defined fields if those are defined.




If the search criteria are too broad, you may be warned that the query could take a while.




Results are displayed in an interactive map.  Select locations from the list or map.



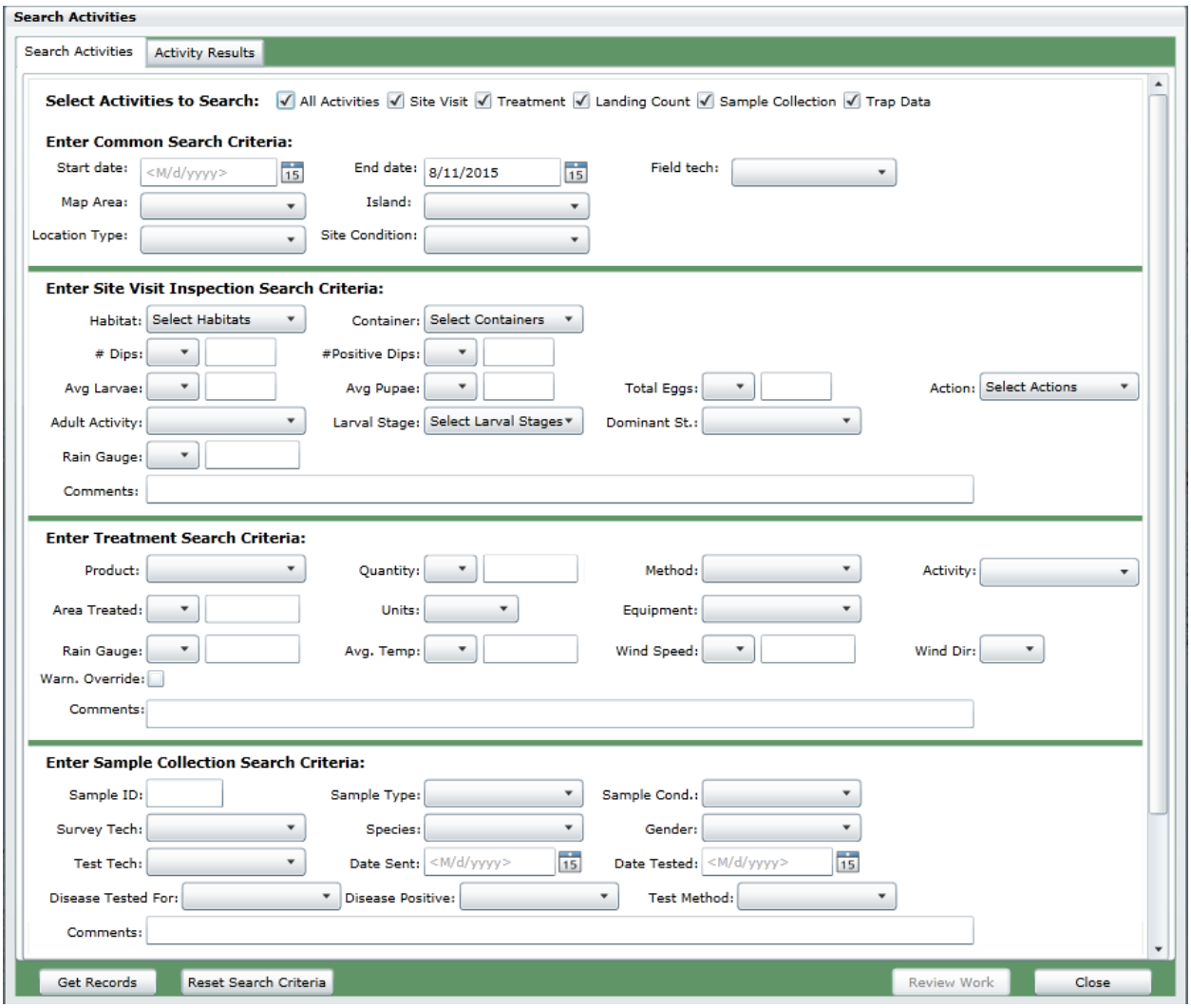

After selecting one or more locations from the map or list (use Ctrl + click or Shift + click to select multimple), you can perform one of the following actions:

- Zoom To – zoom to the location on the mini-map and main map
- Edit  – edit location details
- Service Request – create a new request for the selected location
- View Activities – view all activities for the selected location
- Create Activity – enter activity records for the selected location
- Export Data – export selected locations to CSV file

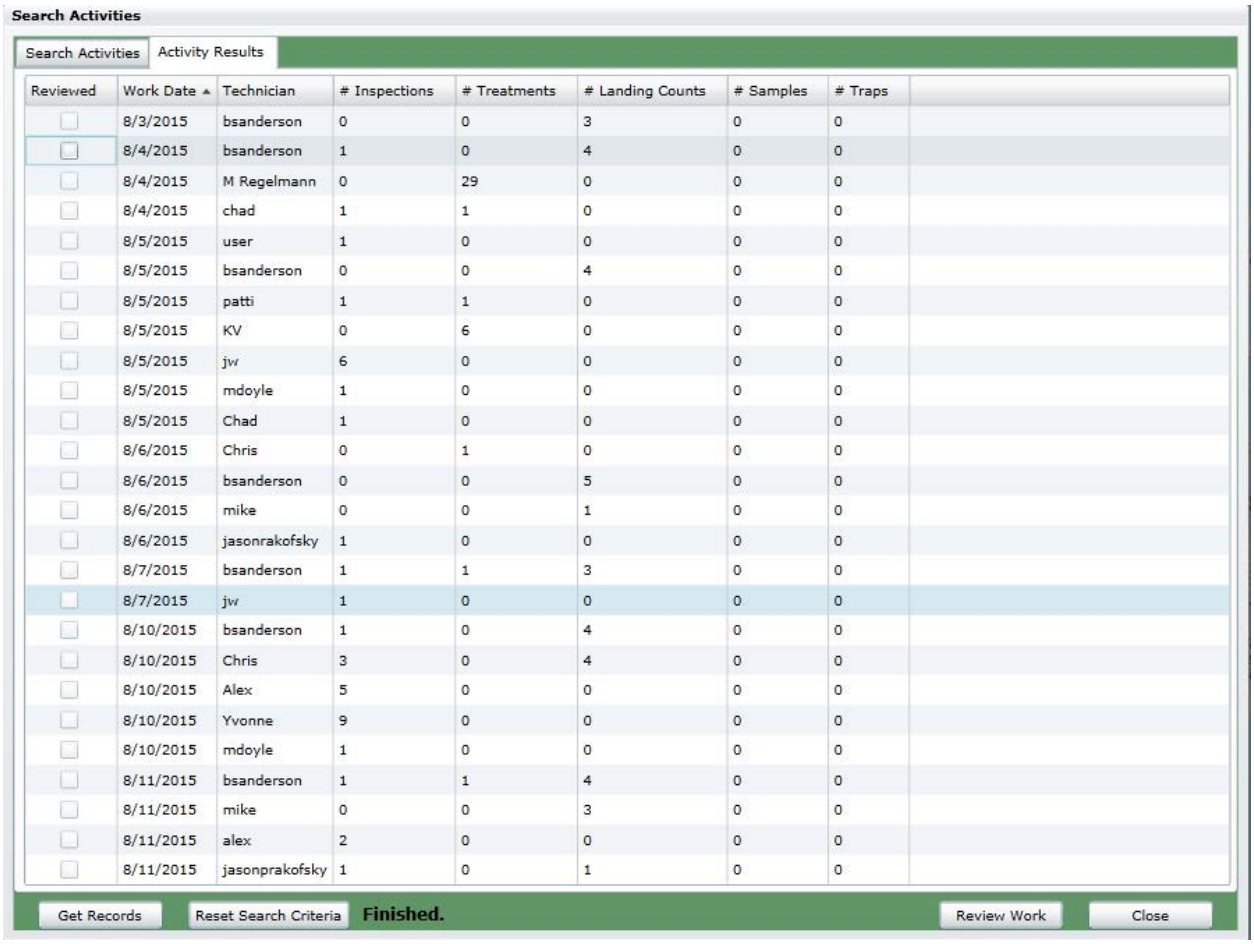
## Search Activities

Search for activities based on any criteria. First, select which activities to search for. Enter common search criteria such as date range, zone, and field tech. Depending on which activities you selected, additional search criteria are presented.

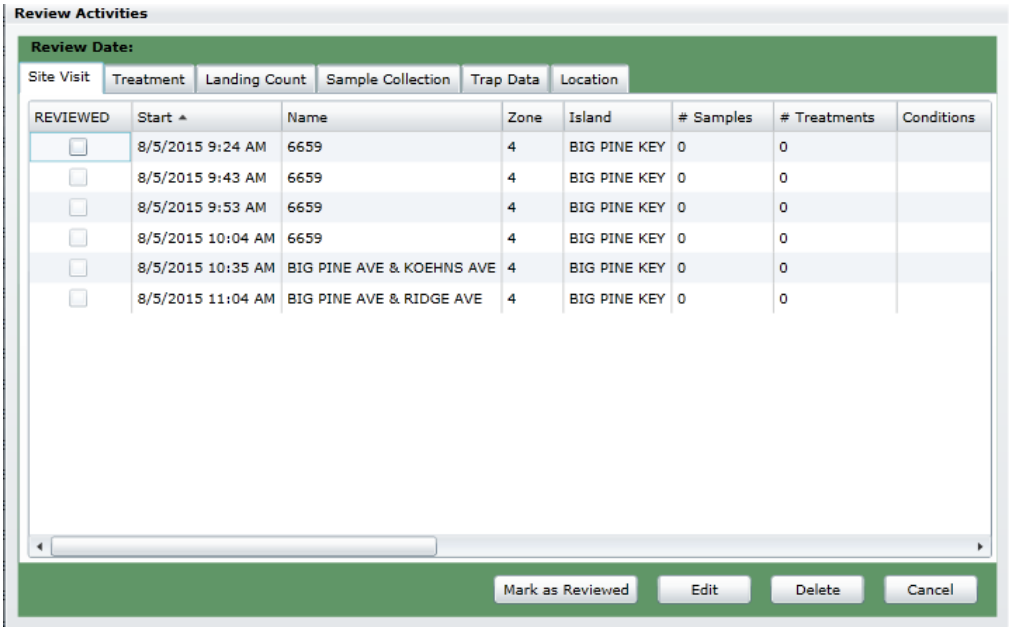
Remember, less is more. The fewer criteria you enter, the more records will be found. The more criteria you enter, the fewer records will be found. Enter in fewer criteria to begin with, then enter more criteria to narrow your results down.



Click Get Records to perform the query.  Results are displayed grouped by date and technician.  Select a row and click Review Work to look at activity details.



Work is grouped by type. Click on each tab to see individual records. Records can be edited, deleted (supervisor only), or marked as reviewed.




It is not necessary to mark work as reviewed, but some people use this feature to track what work has been reviewed and what has not. For example, perhaps you've hired a new employee and the supervisor wants to track their inspection and treatment records for a while to see how they're doing. This feature allows the supervisor to know what has been reviewed.

# Lab Tools

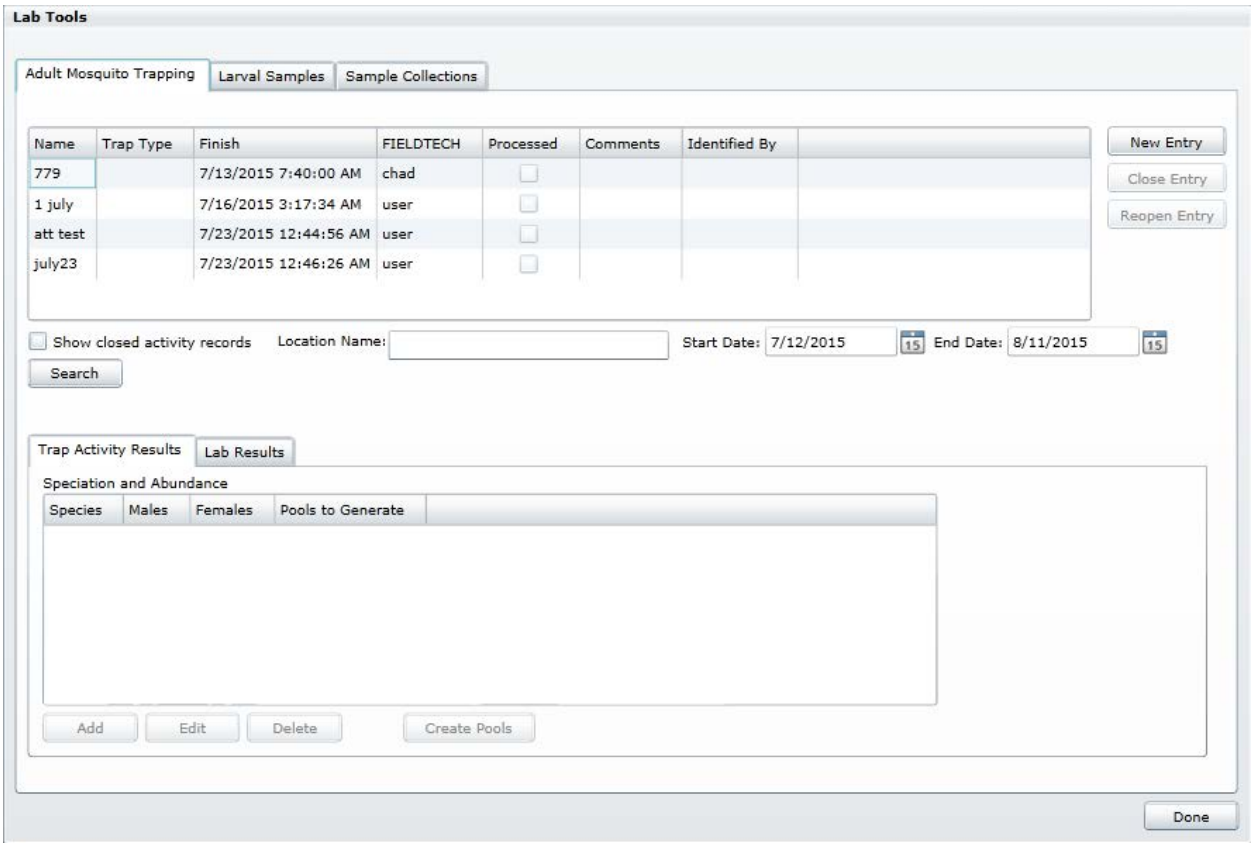
Use lab tools to enter adult mosquito trapping, larval sample, and blood or specimen sample information.

## Adult Mosquito Trapping

Use this tab to create new trap surveys, enter species and abundance information for trap surveys, create pools, and enter lab testing results.

Open (unprocessed) trap surveys are displayed at the top of the screen. Only "trap retrieved" records are displayed. Trap surveys are created in one of the following ways:

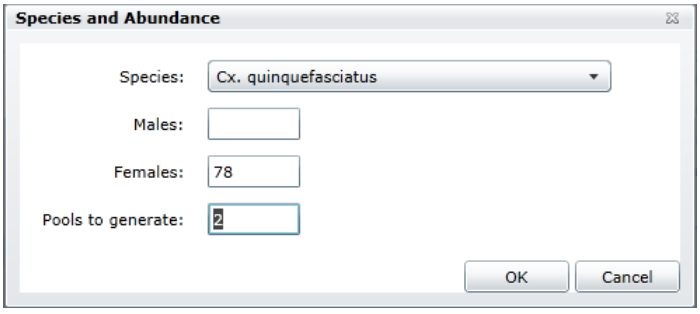
- In the mobile application (activity entry)
- In the Web application from the location popup or activity entry
- Here in the Lab Tools by clicking New Entry



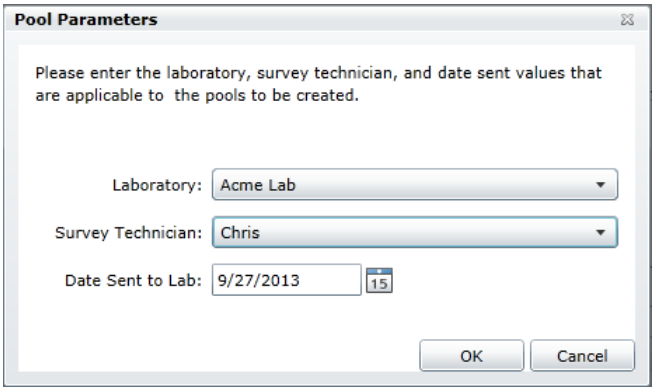

You can sort data by clicking on any column heading. By default, closed activity records are not displayed; check the box to show them. Filter by date by entering a location name and/or date range and pressing Search.

Select a trap survey record to display and enter speciation and abundance information. Use the Add, Edit, and Delete buttons to work with species counts.

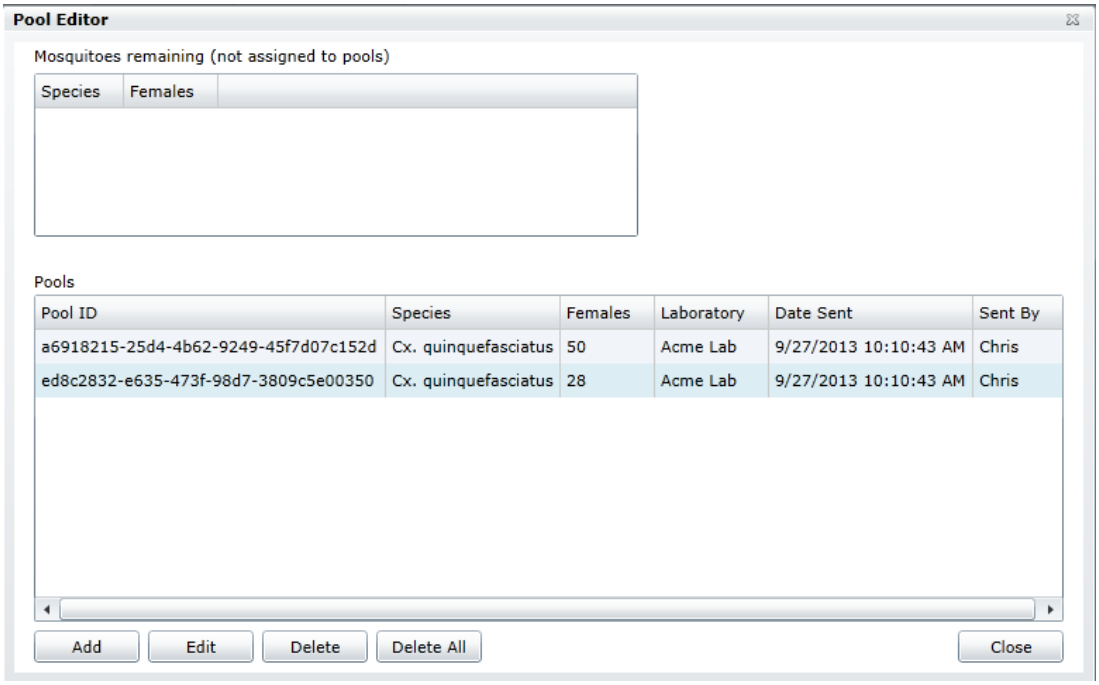
As you enter species records, if the species is selected for pooling, the program automatically calculates the number of pools to generate.



After entering all species counts, if pools are created for testing, press the Create Pools button, then specify the Lab the pools will be sent to for testing, who created the pools, and the date the pools will be sent.

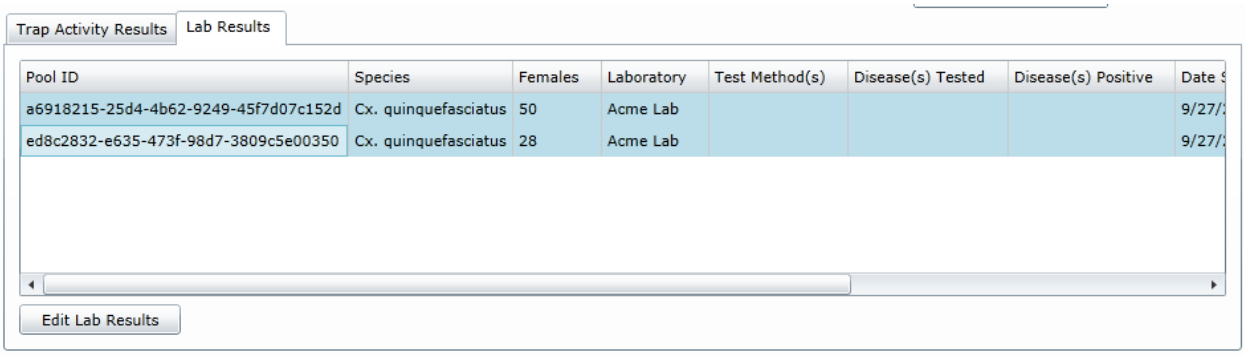



The Pool Editor dialog displays, where you can make changes to the automatically generated pools (adjust quantities, delete or add pools, etc.). Press Close when finished.

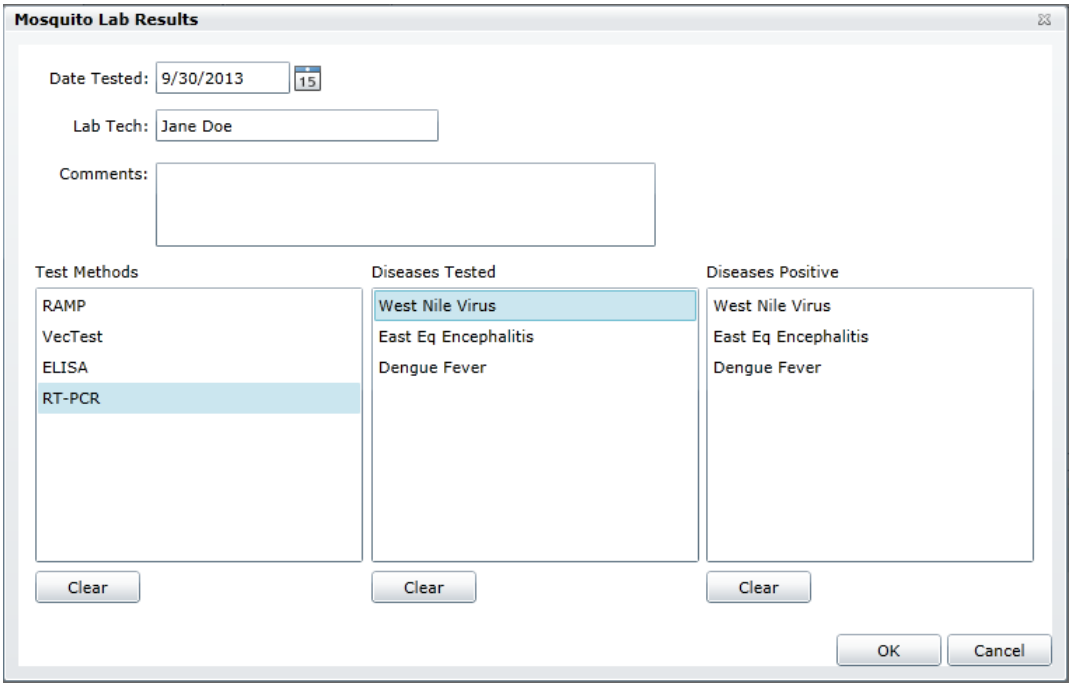



After pools are created, the species and abundance information is displayed “greyed out” and is no longer editable.

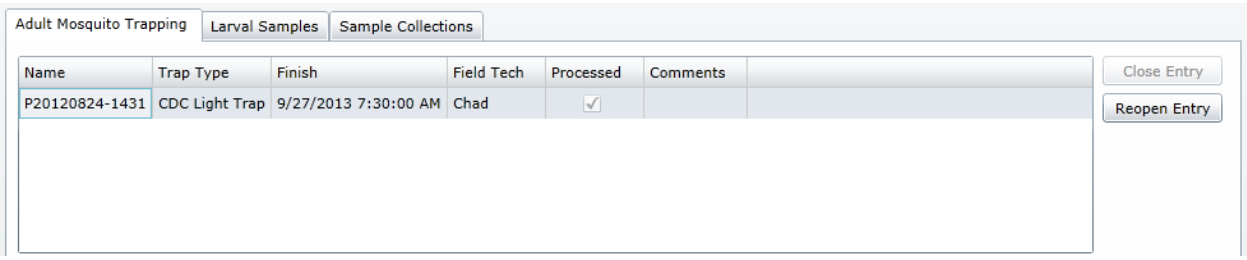
Click the Lab Results tab to enter pool testing results. Select the pools then press Edit Lab Results.




Fill in the information for date tested, test methods, diseases tested, and positives. Lab Tech and Comments are optional. Press OK when finished.




All data is recorded for the trap survey, so highlight it and press Close Entry. Do the same for surveys that you enter species and abundance information for but do not do pooling and testing.

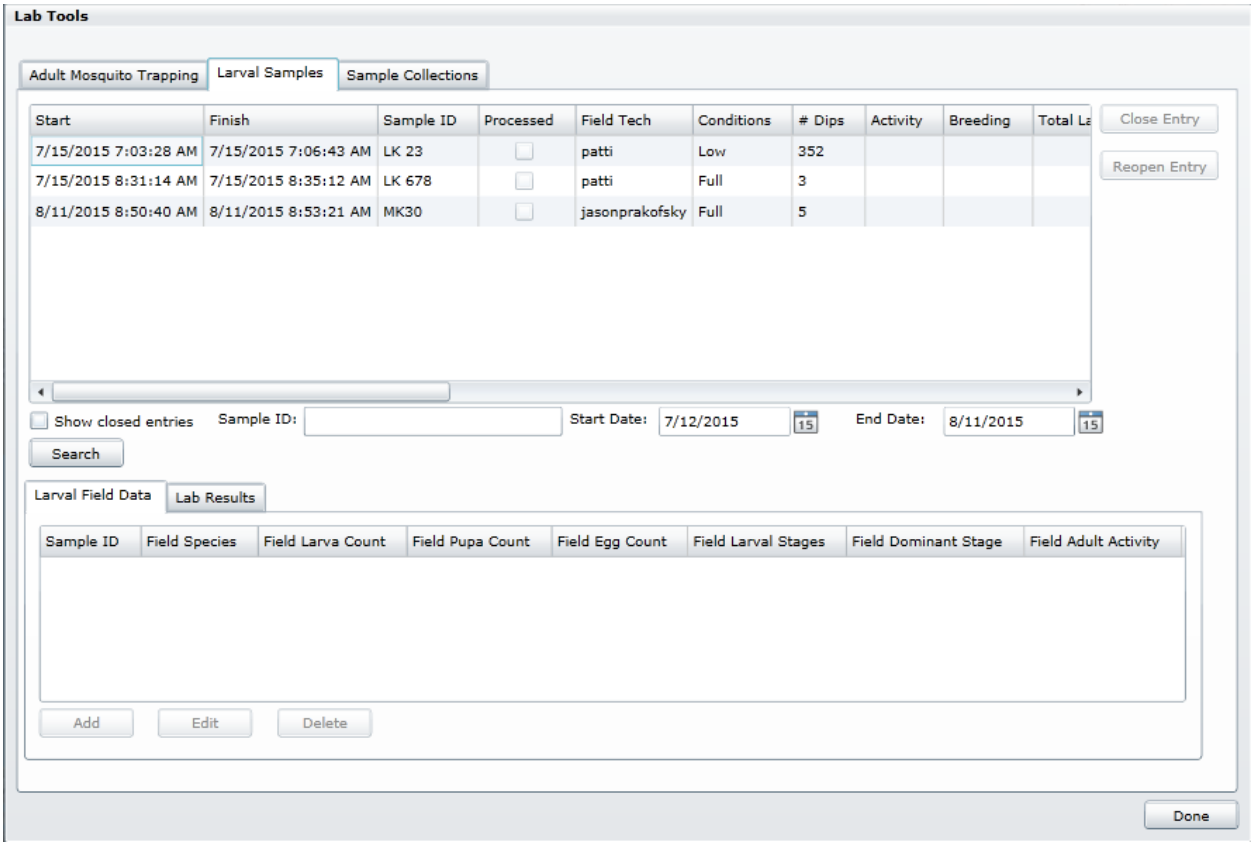


## Larval Samples

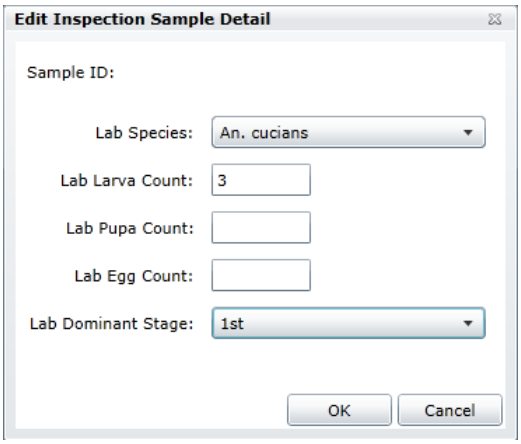
Use this tab to enter species and abundance information for larval samples.

Open (unprocessed) larval samples are displayed at the top of the screen. Larval sample records are created on the mobile application or in the Office/Web application (from the Site Visit activity type).

You can sort data by clicking on any column heading. By default, closed activity records are not displayed; check the box to show them. Filter by date by entering a start and/or end date and pressing Search.



Select a larval sample record to display information for it. Field counts and species identification will display. Press Edit to enter lab identification information for the sample.



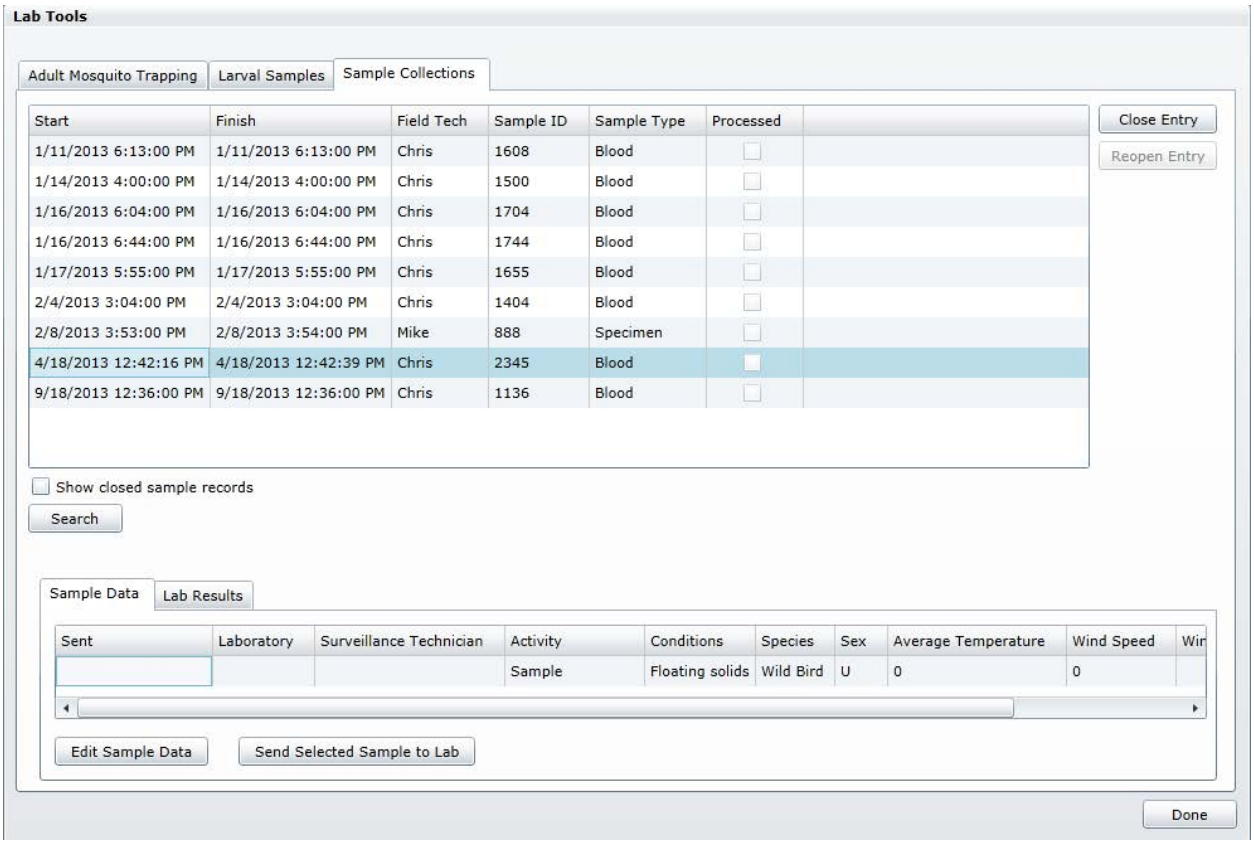

After entering all species count information, highlight it and press Close Entry.

## Sample Collections

Use this tab to edit sample data and enter lab testing information for samples.

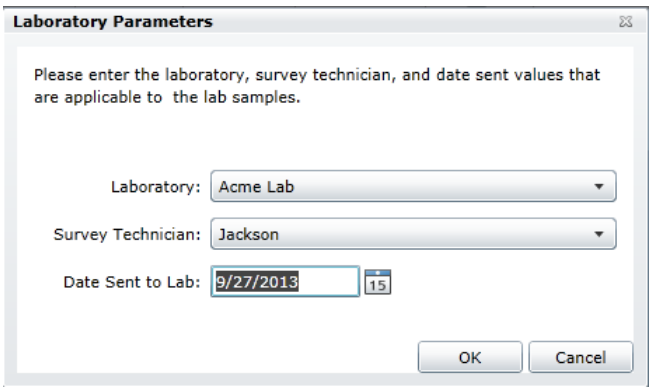
Open (unprocessed) samples are displayed at the top of the screen. Sample records are created on the mobile application or in the Office/Web application (Sample activity type).

You can sort data by clicking on any column heading. By default, closed activity records are not displayed; check the box to show them. Filter by date by entering a start and/or end date and pressing Search.

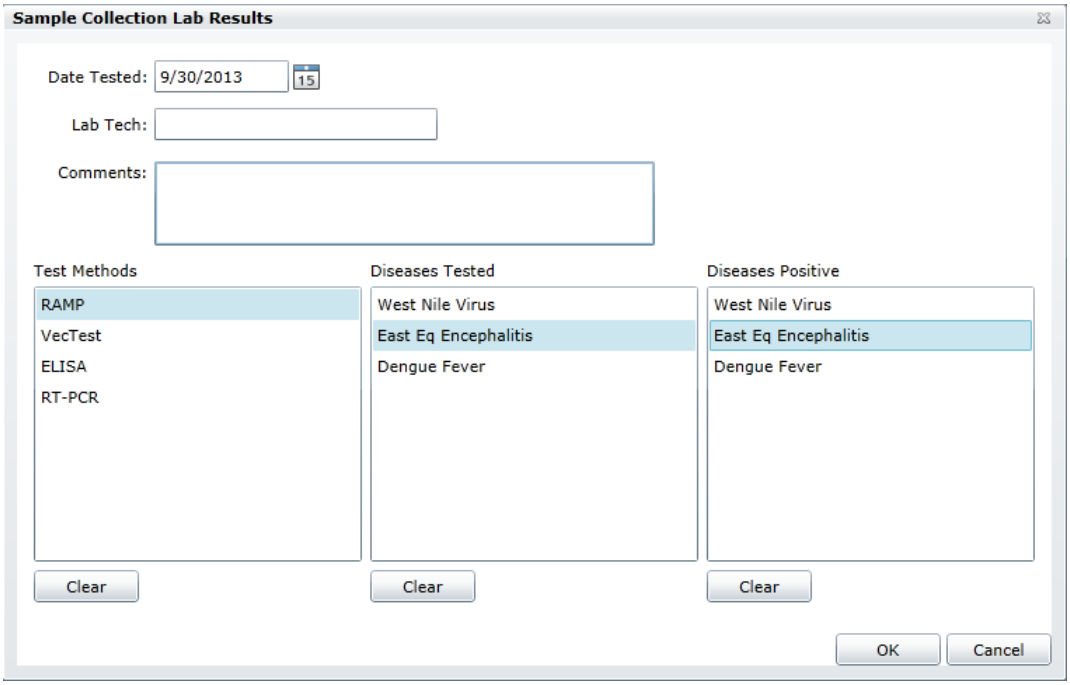



Select a sample record and press the Edit Sample Data to review or edit the sample information.

Select one or more records and press the Send Selected Sample to Lab button to record the lab information.



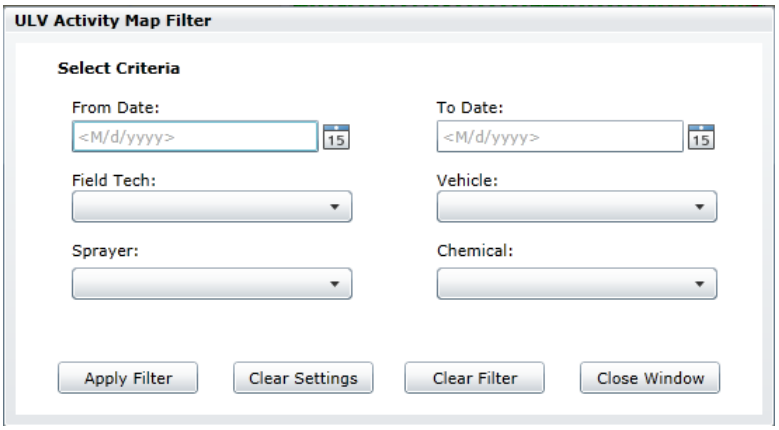

Press the Lab Results tab to enter sample testing results. Highlight the sample and press Edit Lab Results.



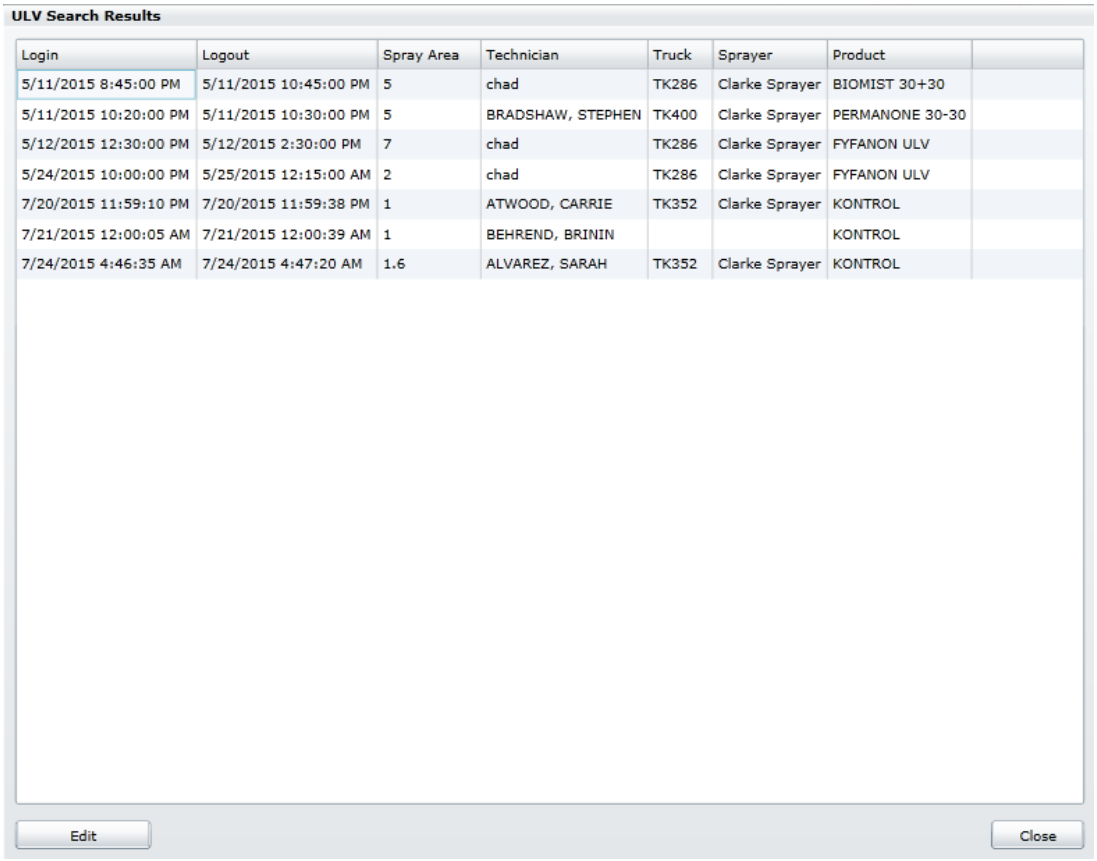

Fill in the information for date tested, test methods, diseases tested, and positives. Lab Tech and Comments are optional. Press OK when finished.

## Edit ULV Sessions

This option is only available if the ULV extension is enabled.



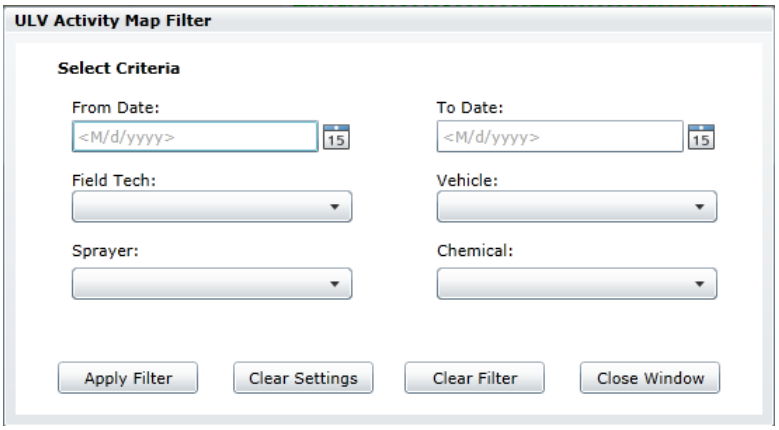

Choose criteria and press Apply Filter. Spray sessions are listed in date order. Click on any column heading to sort the results. Select a spray session and press Edit to make changes to the spray session record.



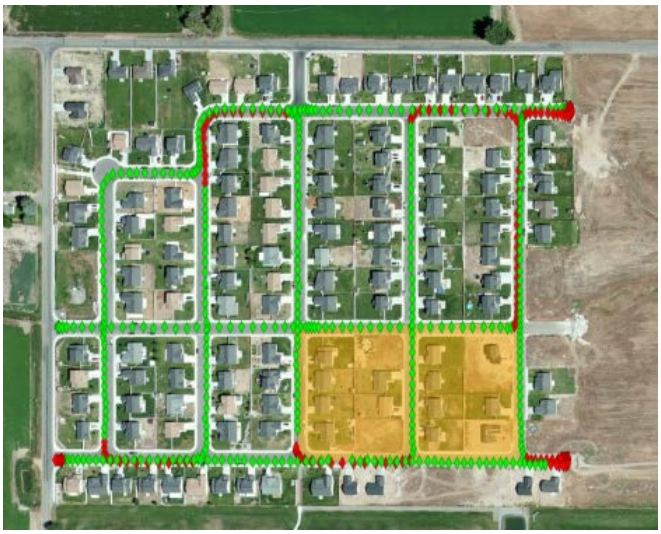

| Login | Logout | Spray Area | Technician | Truck | Sprayer | Product |
|---|---|---|---|---|---|---|
| 5/11/2015 8:45:00 PM | 5/11/2015 10:45:00 PM | 5 | chad | TK286 | Clarke Sprayer | BIOMIST 30+30 |
| 5/11/2015 10:20:00 PM | 5/11/2015 10:30:00 PM | 5 | BRADSHAW, STEPHEN | TK400 | Clarke Sprayer | PERMANONE 30-30 |
| 5/12/2015 12:30:00 PM | 5/12/2015 2:30:00 PM | 7 | chad | TK286 | Clarke Sprayer | FYFANON ULV |
| 5/24/2015 10:00:00 PM | 5/25/2015 12:15:00 AM | 2 | chad | TK286 | Clarke Sprayer | FYFANON ULV |
| 7/20/2015 11:59:10 PM | 7/20/2015 11:59:38 PM | 1 | ATWOOD, CARRIE | TK352 | Clarke Sprayer | KONTROL |
| 7/21/2015 12:00:05 AM | 7/21/2015 12:00:39 AM | 1 | BEHREND, BRININ | | | KONTROL |
| 7/24/2015 4:46:35 AM | 7/24/2015 4:47:20 AM | 1.6 | ALVAREZ, SARAH | TK352 | Clarke Sprayer | KONTROL |

## View ULV Activity

This option is only available if the ULV extension is enabled.




Choose criteria and press Apply Filter. The map zooms to the extent of the selected spray activity.

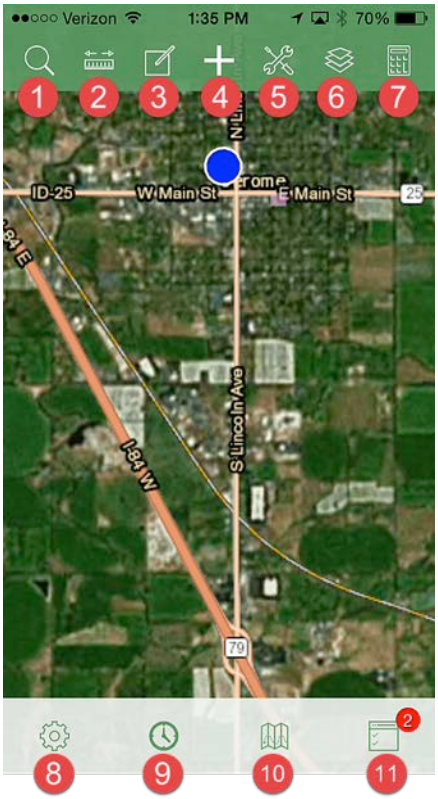


# iOS Mobile Operation

FieldSeeker Mobile for iOS works in connected and disconnected environments. It supports ArcGIS Server Security. It is loaded using iTunes or a Mobile Device Management (MDM) software. It follows the Apple Enterprise Deployment pattern. For more information on installing and configuring the mobile application, see the *FieldSeeker Deployment Guide.*

This section will focus on how to use the mobile application in the field.

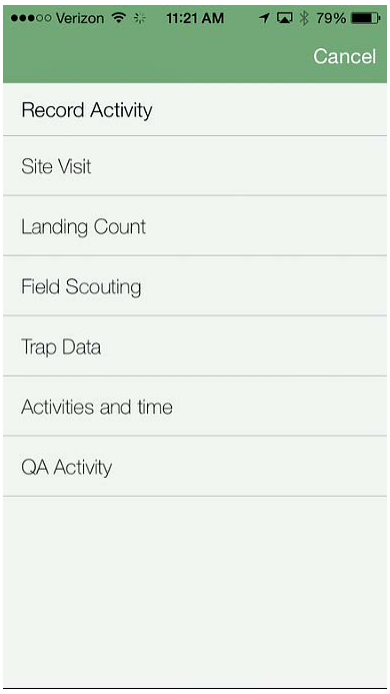
## User Interface – iOS




After logging in, the main FieldSeeker Mobile screen is a map with your location displayed on it. The following tools are available from the main screen:

1. Search Locations – search for locations by name, number, zone, required action, priority, or other criteria, then perform some action on the results
2. Measure – tools to measure distance and area using screen taps to sketch or using GPS

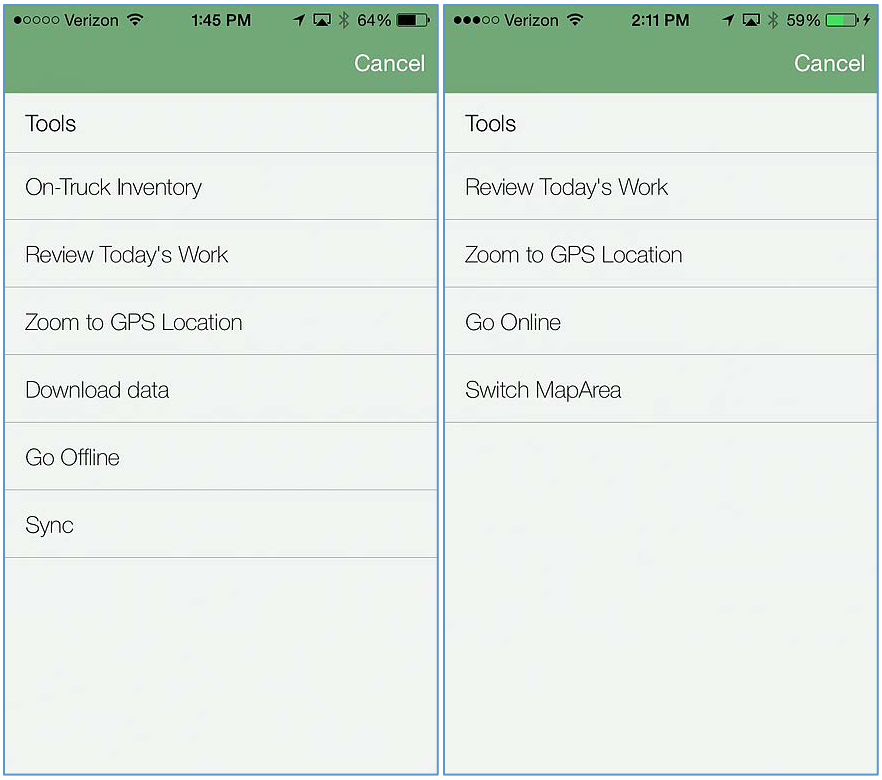
3. Record Activity – menu of available activity types to record such as Site Visit, Landing Count, and Trap. Some activity listings, such as Field Scouting and QA Activity, are optional and may not be available for all users.




4. Add Feature – menu of available feature types to create using screen taps to sketch or using GPS, such as point location, line, or polygon, proposed treatment areas, and ULV/Barrier Spray (optional).


5. Tools menu – shows available tools, such as Review Today's Work, Inventory, and Offline.

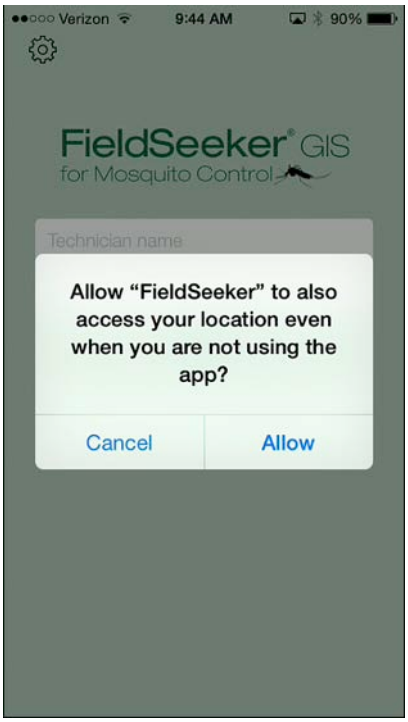
**While Online** **While Offline**




6. Layers dialog – select layers to display and set base map options
7. Calculator – product calculator (also available within Treatment)
8. Settings – program settings
9. Time Filter – filter time-enabled layers
10. Field Scouting (optional) – access Field Scouting tools
11. Service Requests – access Service Requests

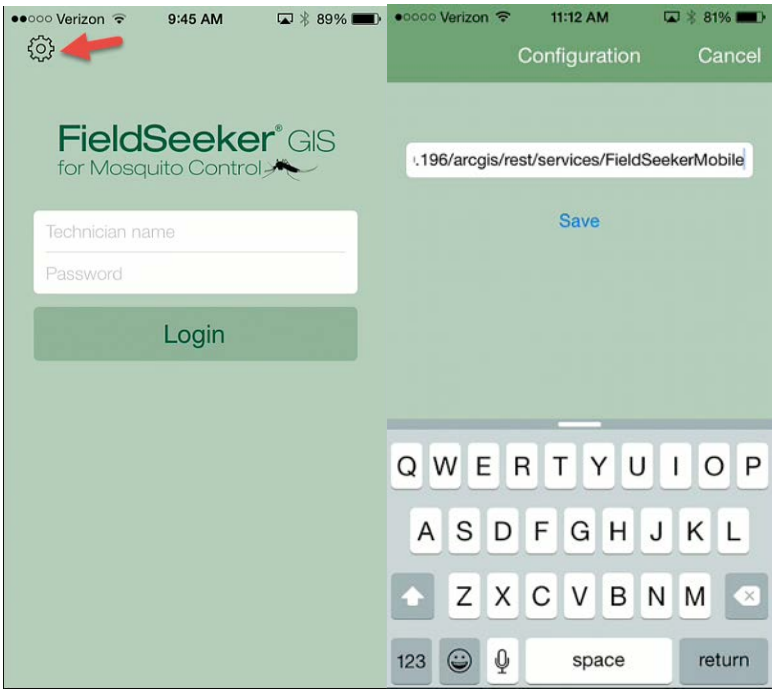
## Startup

The first time you run the application, you may be asked to allow FieldSeeker to access the device's location sensor. Press Allow.




The first time you run the application, you will also need to set and save the feature service URL. This requires connectivity to the server / service URL. (The feature server URL can be obtained from your

ArcGIS Server administrator, e.g. http://servername/arcgis/rest/services/FieldSeekerMobile.

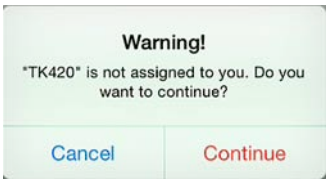



## Login

Enter login credentials and press Login. If the feature service is public, any login will pass authentication, but be careful – all activities will be tagged with the user name that is entered. If the feature service is secured, the user name and password will be authenticated using ArcGIS Server Security. In the following example, a standard Windows \ Active Directory login has been entered (including the domain).

After the user has been authenticated, select the zone and truck.  If you have previously logged in, your past entries will be remembered.

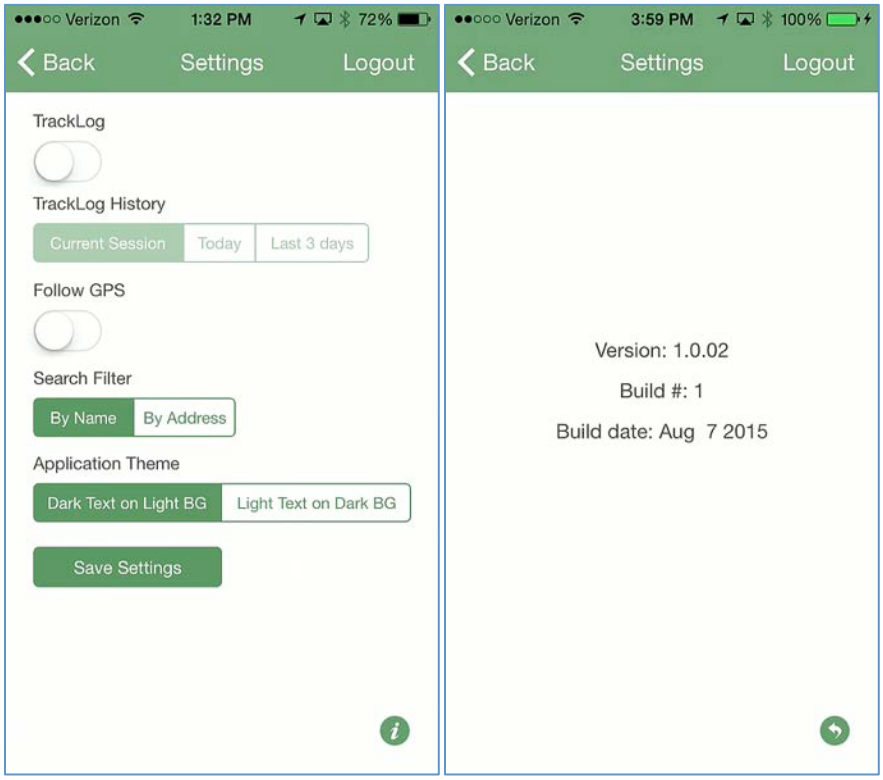

If your user name has been assigned a truck, and you enter the wrong one, you will be warned (but still allowed to select).  Be careful!  If you select the wrong truck, your treatments will be deducted from that truck's inventory.




If your GPS location is not in the selected zone, you will receive a warning.


That's OK, as long as you are online, you can view and collect data in any zone.

## Settings




The settings dialog contains the following:

- Tracklog display on or off – a tracklog is always recorded; this setting is whether to display it on the map or not. If turned on, you can specify whether to show the current session, today, or the last 3 days.
- Follow GPS – If turned on, the map will automatically follow your GPS location. Turn this off if you want to be able to zoom in on some other part of the map.
- Search Filter – choose between displaying location Name or Address / Description. This applies to the Search results page.
- Application Theme – default is standard dark text on light background, but you can also choose a high-contrast light text on dark background. This setting may greatly help visibility in high glare environments.
- Save Settings – make sure you save before pressing Back!

## Map Navigation and Display

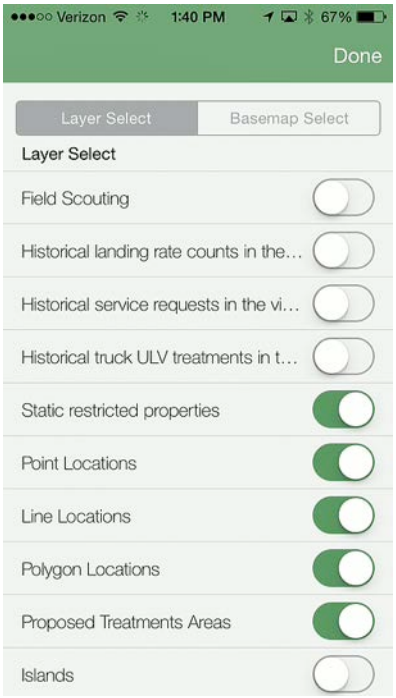
Map navigation is easy. Tap and drag to move around the map. Pinch zoom to zoom in and out. You can also zoom to your current GPS location (Tools > Zoom to GPS Location) and have the map follow your location (Settings).

You can change the appearance of the map by turning layers on and off, changing basemaps, and turning on time filters.

**Layer Select**

To show or hide layers, go to Layers. Toggle layers on or off here. Some layers may be configured to be visible at all times, in which case you will not be able to turn them off (e.g. Restricted Properties).

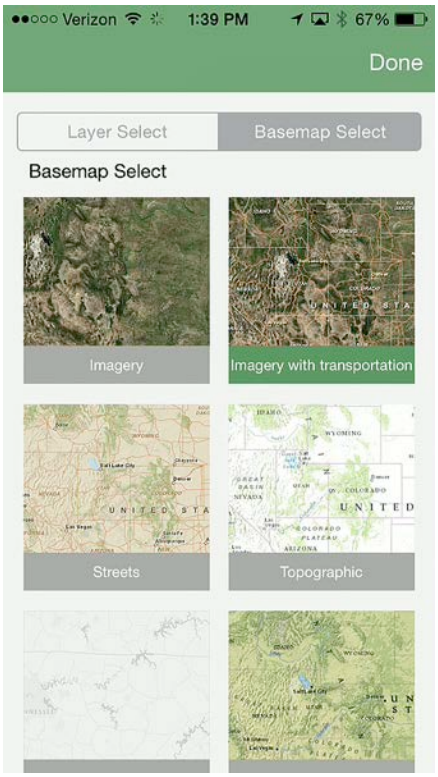
Layer names, symbology, and display scale settings are set on the server by the ArcGIS Administrator.




**Basemap Select**

To change basemaps, go to the Basemap Select tab. Various Esri basemaps are available for selection. These basemaps are maintained by Esri from a variety of commercial sources and are automatically updated. Note: basemap selection is only possible while online.

Some data may be easier to see using a different basemap. For example, the Light Grey Canvas may help you see your data more clearly without any clutter in the background. The Imagery basemap may be best for drawing in a new polygon location, but because it is dark it may be difficult to see in high glare conditions. Imagery with transportation shows street names so it may help you orient yourself. Streets and Topographic may show building outlines in urban areas.




**Time Control**

Some layers, such as Service Requests, Trap Results, Landing Counts, or Field Scouting, may have lots of data for past months and years.  You can filter what is displayed on the map by using the time filter.



## Measure Tools

Use the measure tools to measure distance and area.

Enable the Measure tools.


Select line or polygon.  Tap point by point to draw the line or polygon by hand.

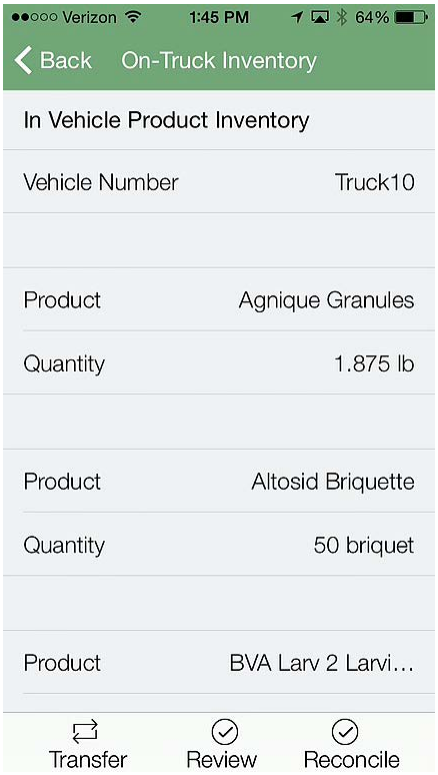

1. Undo – erases the last point you added
2. Remove – start over with your measurement
3. GPS – use your current location as a measurement point

Tap Done to remove the measurement tools and go back to the main screen.

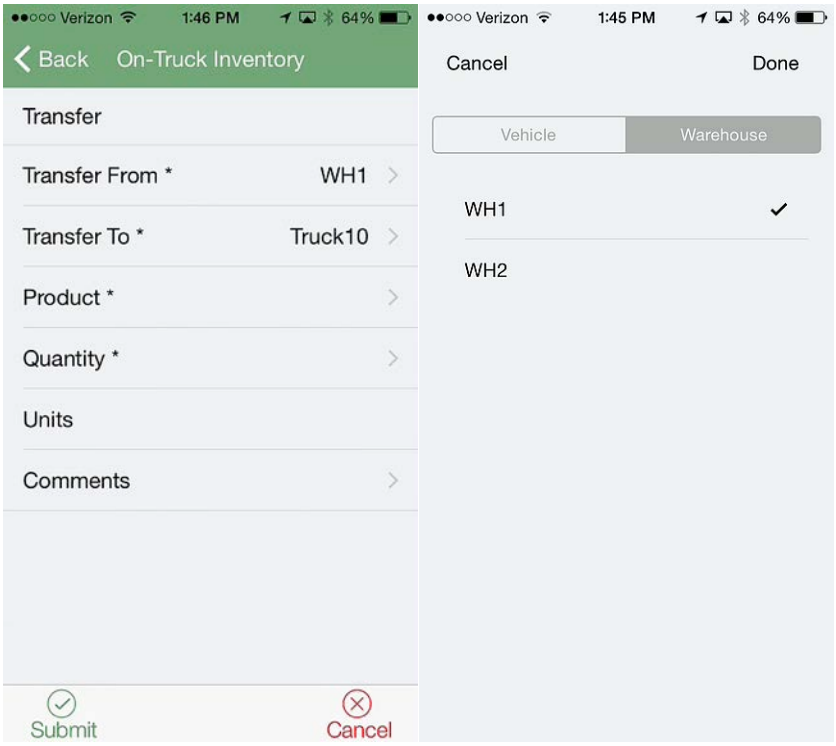
## Inventory

One of the first things to check before recording field work is your on-truck inventory.  Tap Tools > On Truck Inventory.

Your current on-truck inventory will display.  Each time a treatment is recorded, the product inventory for that vehicle is reduced.  If treatment amounts are off by a small amount, the reconcile tools can be used to make adjustments.



When you put product on your vehicle, record a Transfer.




When you do a physical count, tap Reconcile to adjust your inventory amounts and enter comments.

Tap Review to see transfer and reconciliation history for your vehicle.

## Record Activity

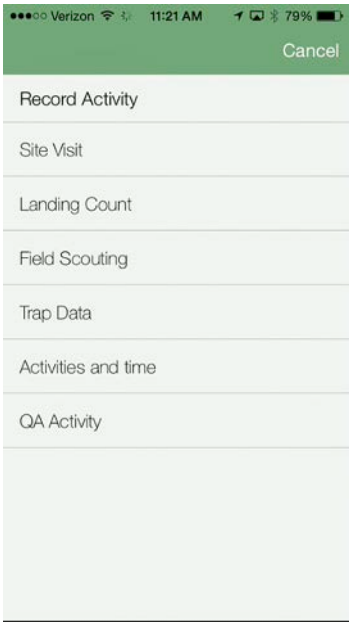
Activities include Site Visit (Inspection + Treatment + Larval Samples), Landing Count, Trap, Miscellaneous (Activities and Time), and QA Activity (optional). Field Scouting will be covered in its own section.

Activities can be entered from the toolbar, from a location popup, or from search results.

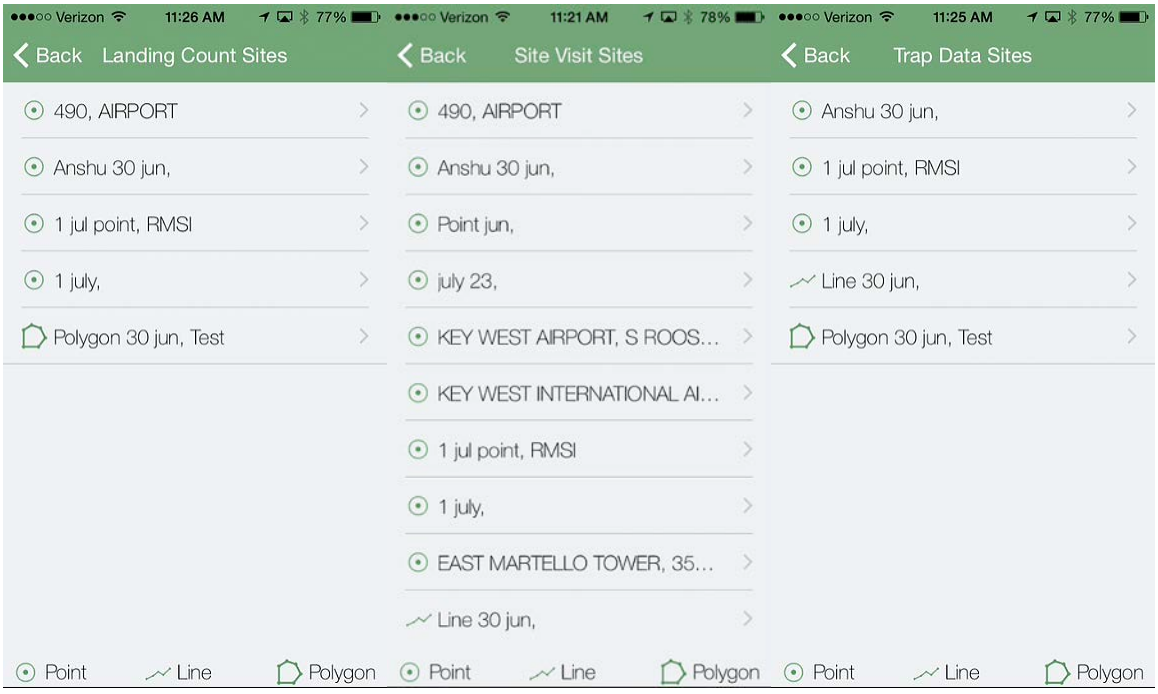
### From Toolbar

Tap the Record Activity tool.


Select the activity type.




Relevant locations from the map are listed from nearest to farthest away. For example, if you select Trap Data, only trap locations will display. If you select Landing Count, only landing count locations will display. Please note that only locations within the map extent are listed – if you wish for more to be listed, go back to the map, zoom farther out, and repeat. Or, use one of the other methods for entering an activity.

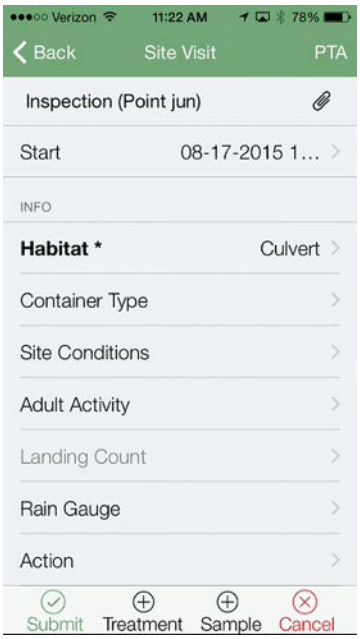



Tap the location you wish to enter the activity for. Enter the activity details.

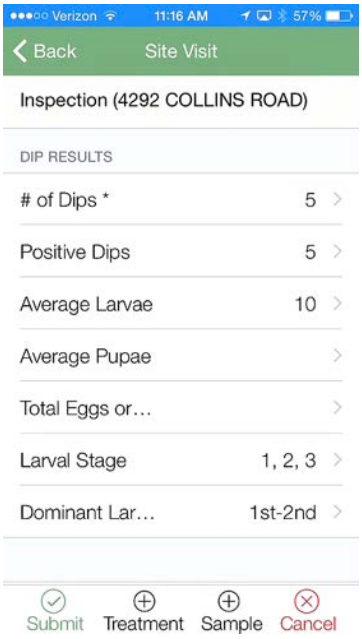
**Site Visit**

Site Visit is for entering inspection, treatment, and larval sample information. All inspection information, all treatments for the site, and all larval sample information should be entered before pressing Submit. More than one treatment and more than one sample can be recorded.

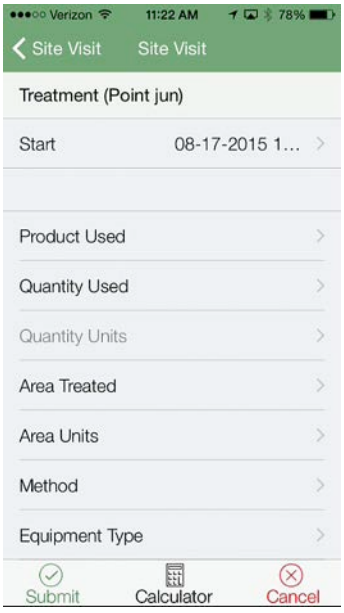
The Start date and time is automatically entered when the page opens. Tap on it to change the start date or time to a previous one. Habitat defaults to the habitat of the location selected. Habitat and Container are multi-select. Container, Site Conditions, Adult Activity, Rain Gauge, and Action are all optional. Landing Count is a shortcut to the Landing Count screen for those instances where a site visit includes a landing count. Action is also multi-select.




If necessary, scroll down to Dip Results. Enter in # of Dips. Nothing else is required, unless you record that there were Positive Dips or record that there were Larvae, in which case you are required to enter Larval Stage and Dominant Larval Stage.

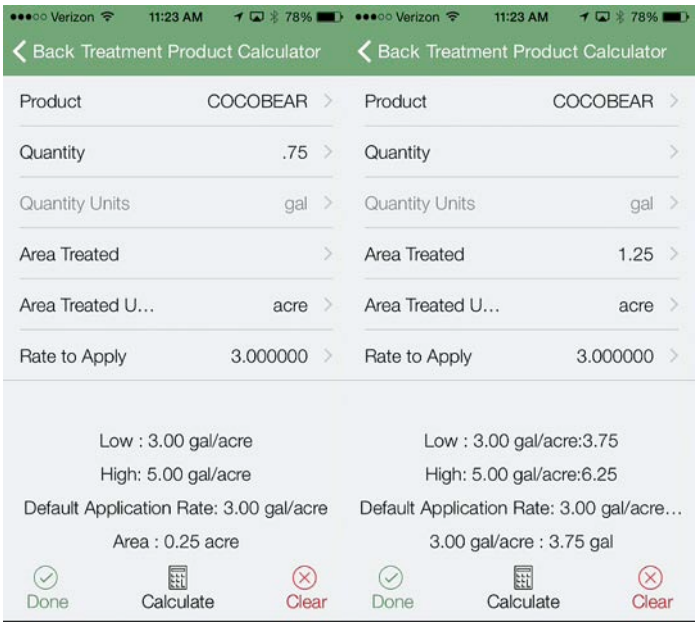



If one or more Treatments was performed, tap +Treatment to add it. Select Product Used and Quantity. If a Default App Rate has been configured, the Area Treated will calculate automatically. Method, Equipment Type, and Comments are optional. End time will fill in with the current time when you press Submit. Or, you can change it to a past time. Please note that if the Product you wish to use is not listed, it is because no inventory for that product exists on your vehicle. In that case, you will need to go to On-Truck Inventory and record a transfer from a warehouse or another location.



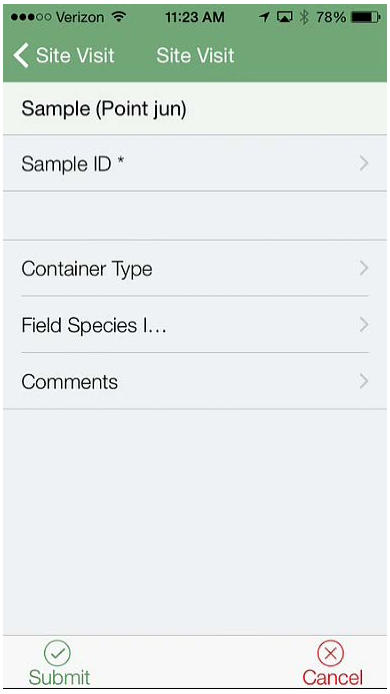

You can tap the Calculator to assist you in figuring either quantity to use for a given area, or the area treated by a given quantity. Select a Product, enter a Rate to Apply (this will default to Default App Rate if

configured), then enter either a Quantity or an Area Treated and press Calculate. The given result will display at the bottom of the screen. Press Done to copy that information back to the Treatment page.




Press Submit to save the Treatment. You will receive confirmation that the treatment saved, and an incrementing number will appear next to Treatment. You can enter more treatments if you need to.

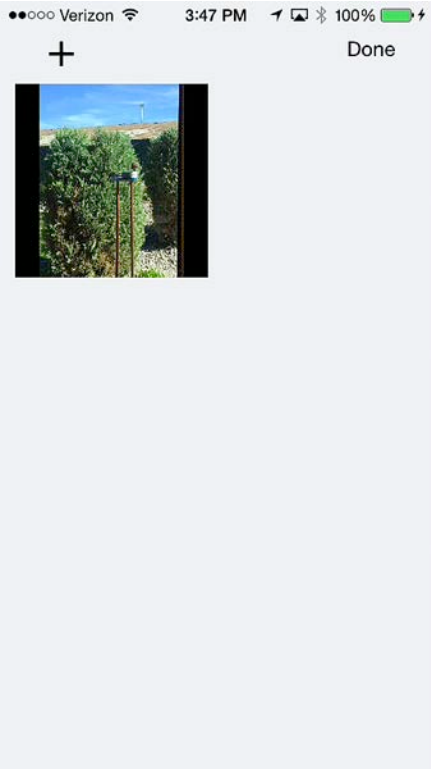
If one or more larval samples is taken for lab species identification, tap +Sample to add the record. Enter the Sample ID (from the sample container). Optionally enter Container Type, Field Species ID (multi-select), and Comments. Lab identification results will be entered later in the Office application.



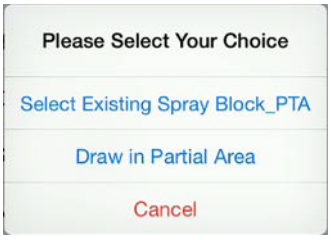

When finished, press Submit. You will be informed of success, and an incrementing number will appear next to Sample. You can enter more Samples if you need to.

Tap the paper clip button to attach a picture to the site visit. Select whether to take a picture or choose from the gallery. You may be prompted to allow FieldSeeker to access your photos.

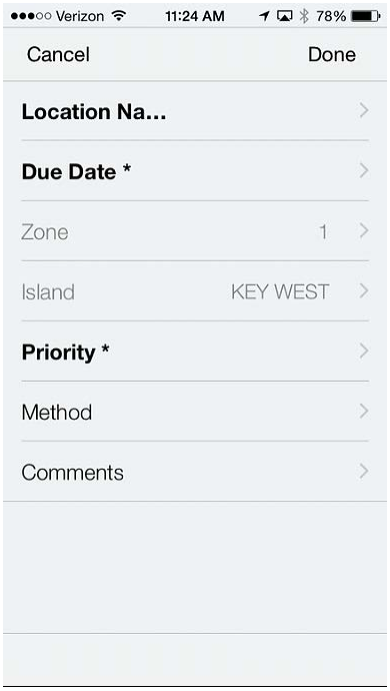
You can add more attachments or remove them at any time by tapping on the paper clip again.  Tap and hold an existing picture to enable the option to delete it.  Press the + button to add more.




You can also record a Proposed Treatment Area based on your findings during the site visit.  You will be prompted to select the entire spray block or draw in a partial area.



Then you will be prompted to enter in details for the Proposed Treatment Area, such as Name (e.g. spray block), Due Date, Method, Priority, and Comments.

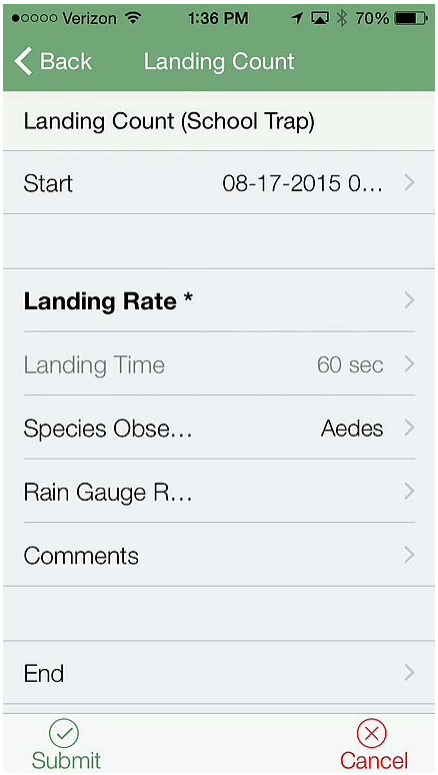



After pressing Done you will be returned to the Site Visit screen. (You can also create a Proposed Treatment Area during Field Scouting, or from the main menu Add Location tool.)

Review the information on the main Site Visit screen and check for completeness. If all information is filled in correctly, tap Submit. The End time will be auto-entered, and you will receive confirmation of successful entry.

**Landing Count**

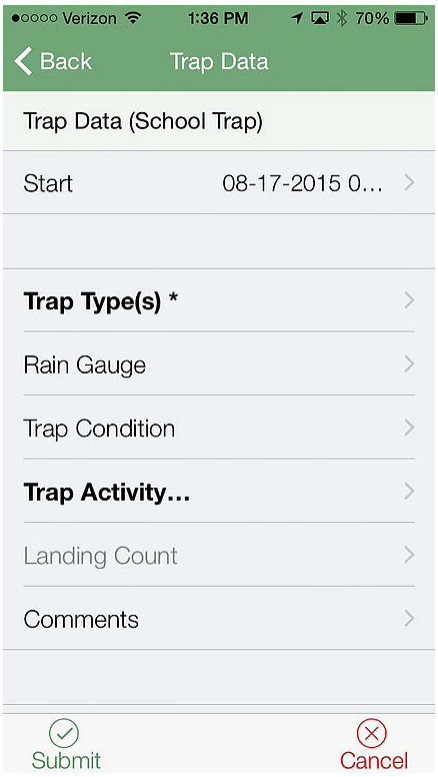
Enter the Landing Rate. Landing Time defaults to 60 seconds (this is configurable in the Web application). Optionally enter dominant species (genus) observed, rain gauge reading, and comments.




Adjust Start / End time if needed and press Submit. You will receive confirmation of successful entry.

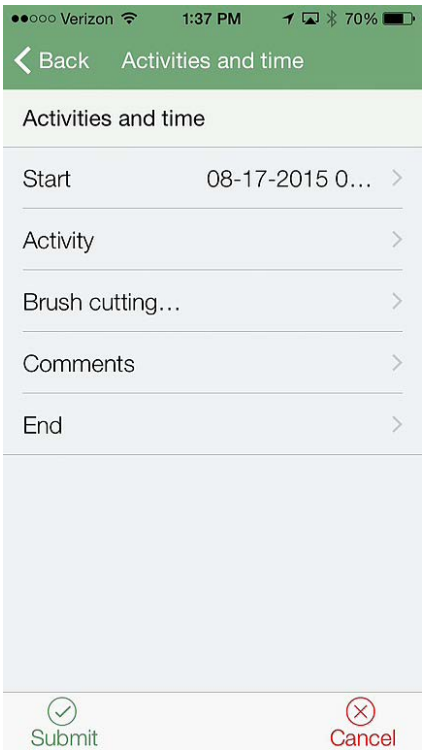
**Trap Data**

Enter the Trap Type, whether you Set or Retrieve the trap, and optionally enter rain gauge, trap condition and comments. Adjust the Start and End time as needed and tap Submit. You will receive confirmation of successful entry.



**Activities and Time (Miscellaneous)**

Enter Start and End time and Activity category. Optionally enter information in user-defined fields (in this screen shot, Brush Cutting (lin ft) is one of these) and Comments. Tap Submit. You will receive confirmation of successful entry. Note: User-defined fields can be configured in the Office / Web application.



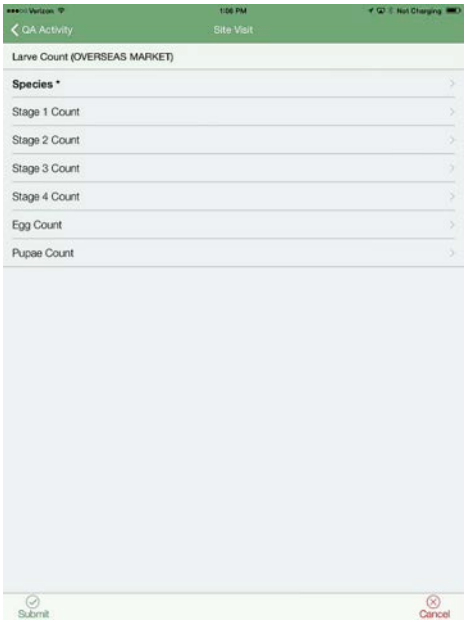

**Sample**

Enter Start and End time, a Sample ID, Sample Type, and Species. Optionally enter gender, condition, environmental information, and comments.


**QA Inspection (Optional)**

The QA Inspection activity is best done on a larger screen (iPad Mini). Required entries are highlighted in bold. Fill in general site details (type, habitats, acres). Optionally fill in water conditions, aquatic organisms, vegetation, and recommended actions.


To enter larval counts from dips, tap **+Larvae count**.

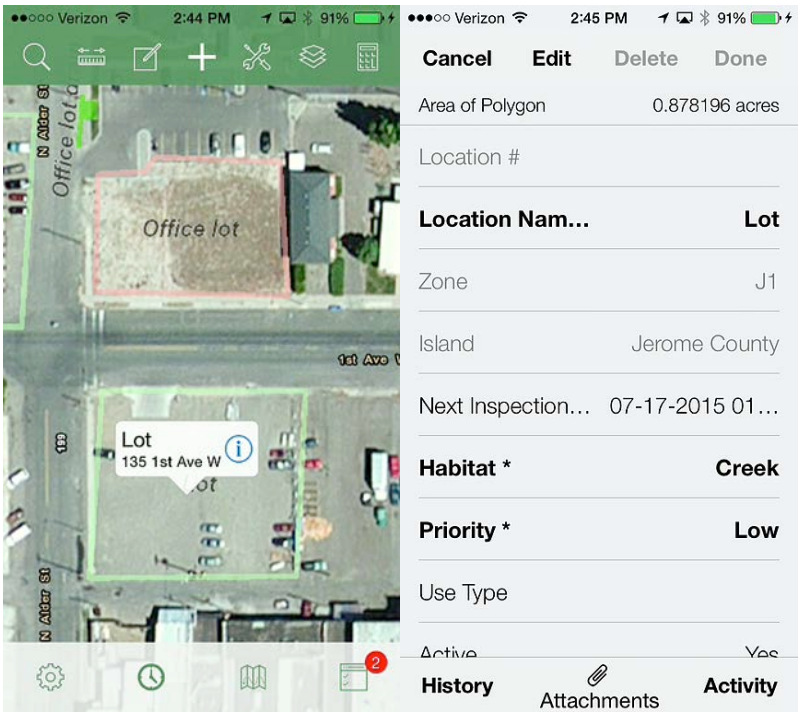



To enter product observations, tap **+Observation**.

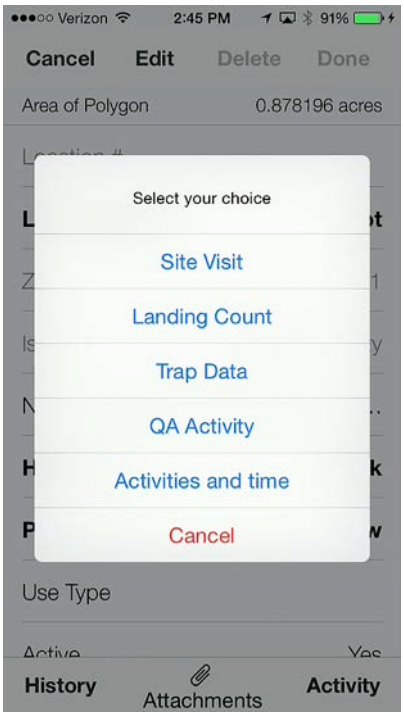

After all information is filled in, tap Submit.  You will be informed the data was saved successfully.

## From Location Popup

Tap a location to display the popup for it.  The Name and Description / Address will display.  Tap the (i) button to view more details and options.

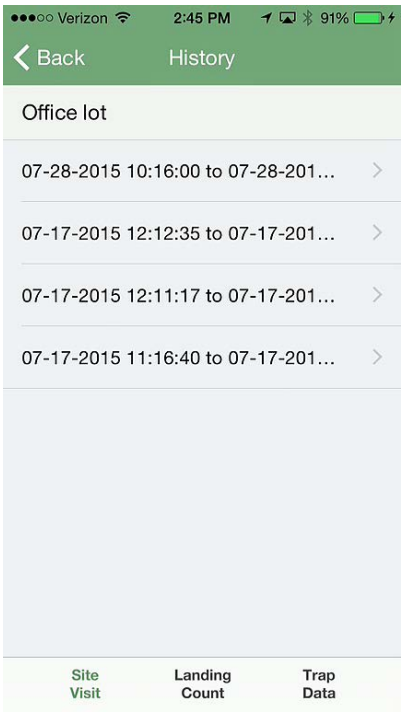



Tap Activity and select which activity to record for the location.



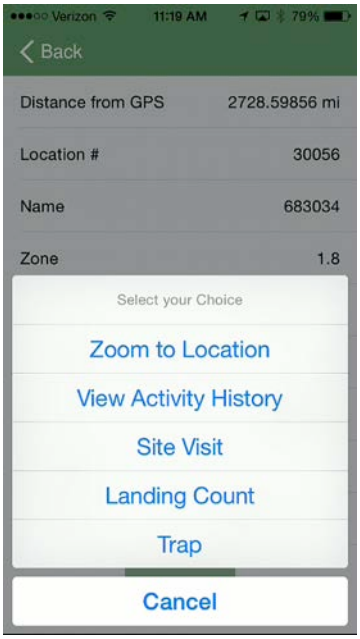

Other actions available from the Location popup:

- Edit – edit location attributes
- Delete – only available for locations created today by logged in user
- Attachments – add or remove attachments for a location
- History – view activity history for the selected location




## From Search Results

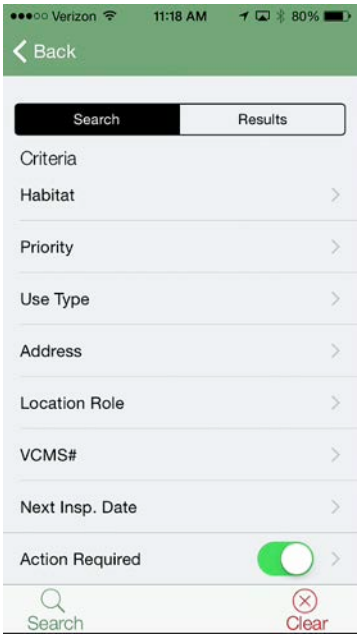
After searching for a location and selecting the result, tap the Menu to select an action.



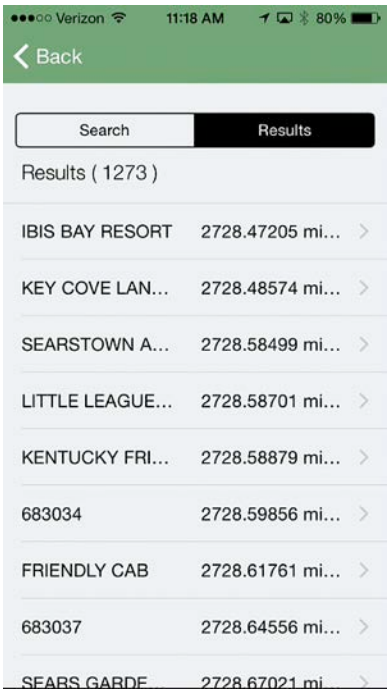

# Search Locations

Tap the Search Locations button.


Enter in search criteria then press Search. For example: “Zone 5, Action Required: YES”; “Zone 2, Location Role: Trap”; “Zone 3, Next Insp. Date > 9/1/15”; “Address: Higgins”. When entering criteria, less is more. Enter fewer criteria to display more results; enter more criteria to narrow the results. Note that Location # is a new auto-entered number. Location Name and Address will do partial string searches. For example, “Higgins” in Address will find all locations with Higgins in the name, regardless of the address number, prefix, or suffix.



Search Results will be displayed from nearest to farthest away.  The search results count will display. Tap on one of the features to see more details.



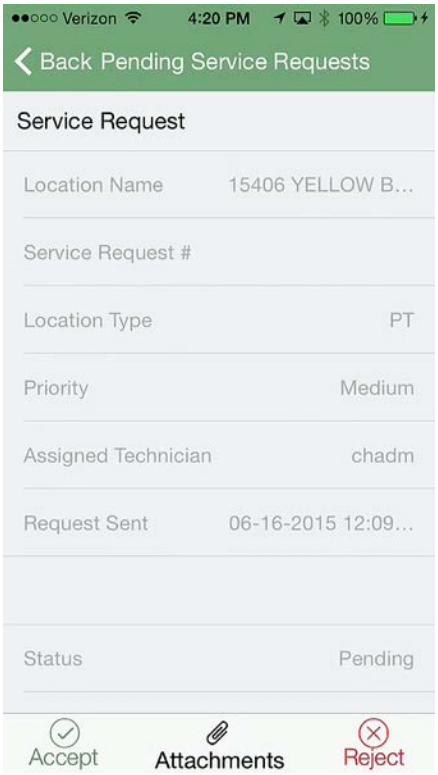

In addition to entering an activity record for the location, you can also view activity history or zoom to the location on the map.  After zooming to the location, you can edit it or enter activities from the location popup.

## Service Requests

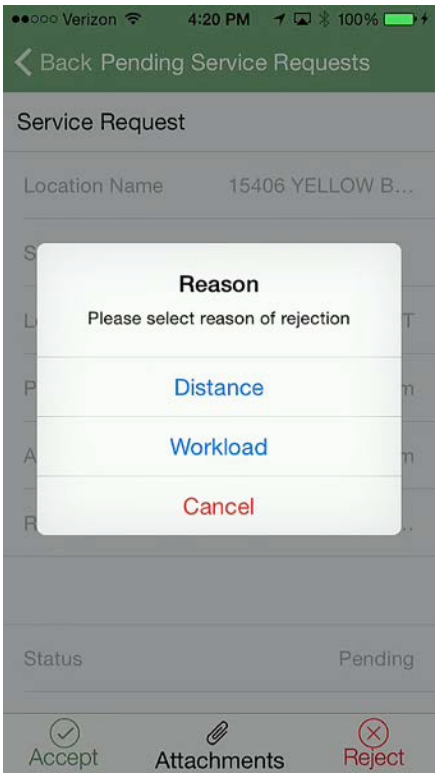
When you log in to FieldSeeker Mobile, the number of Service Requests assigned to you will display in the lower right.  That count will update every time you open the Service Requests list, or each time a tracklog point is saved.


Tap on the Service requests button to view requests that are pending (not yet accepted) or that are assigned to you.

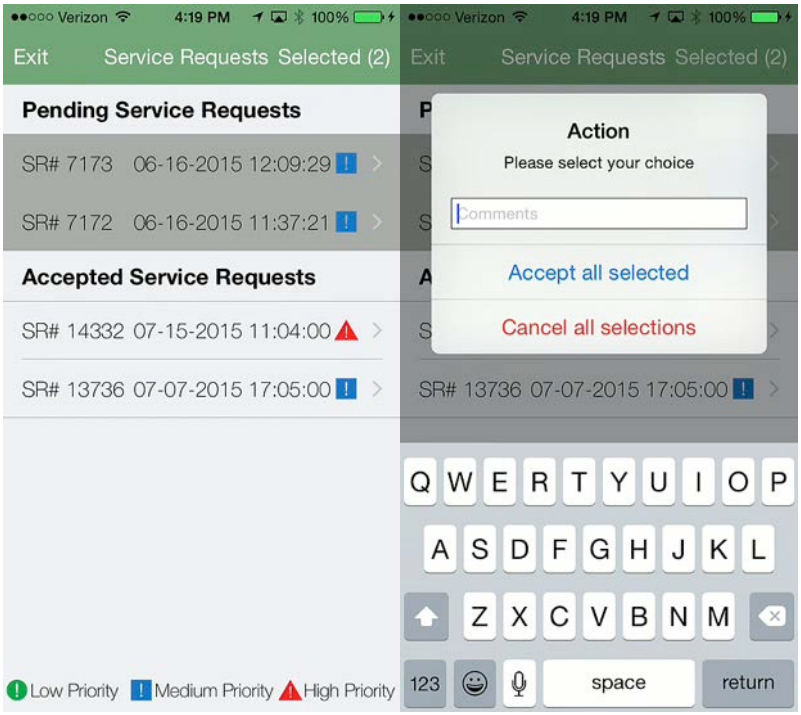
Tap on individual pending requests to review information about them and to accept or reject them.



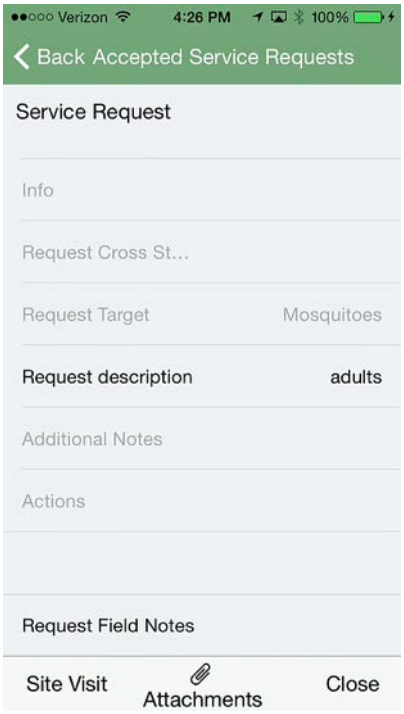

If you reject a request, enter the reason why.



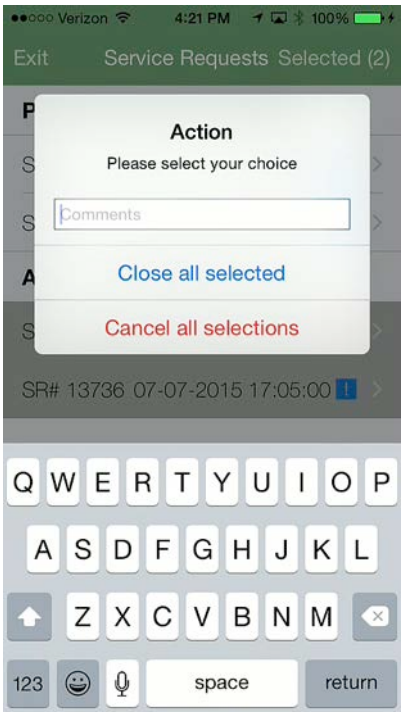

You can also tap and hold to select multiple pending requests, then accept them all at once. Optionally enter comments that will be recorded for each selected request.



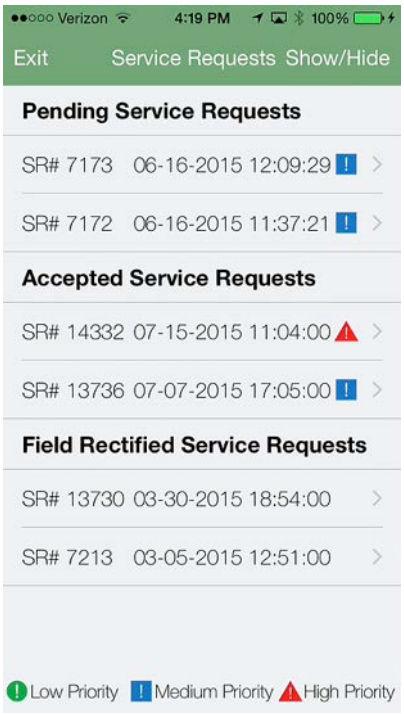
Tap on an individual Accepted request to review or update information about it.  Request Description and Field Notes can be edited.  You can also add attachments, record a Site Visit, or Close the request (this will mark it as Field Rectified).




You can also tap and hold to select multiple Accepted requests, then Close them all at once.




Tap Show/Hide to show Field Rectified requests, if you need to enter additional data on them after you've closed them.



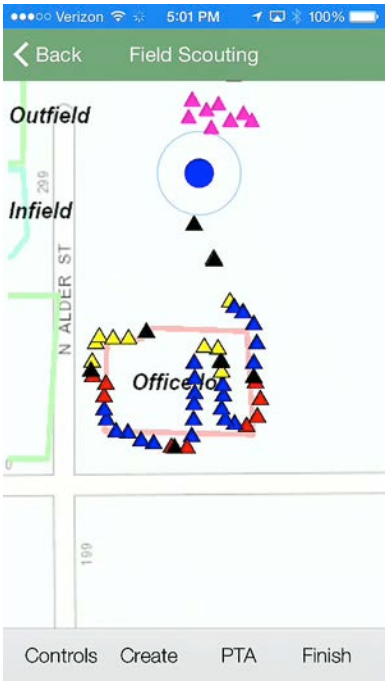
## Field Scouting

Field Scouting tools allow you to quickly record positive and negative dips while moving around a large area. The resulting findings are easily visualized on the map and can be used to draw in proposed treatment areas and to record site visits for existing polygon locations.

Field Scouting is accessed from the Record Activities menu, or from the main screen.

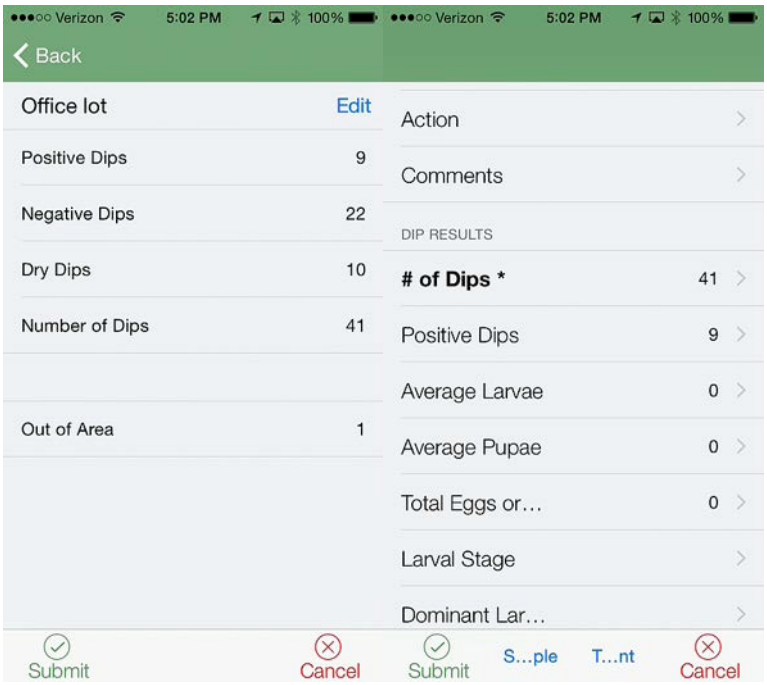

Field Scouting displays large buttons, each with a distinctive sound. As the user moves around in the field, tapping red, blue, and yellow (for larvae found, wet but no larvae, dry), points are recorded in the FieldScoutingLog layer. (Delete removes the last point collected, if it was an inadvertent screen tap.)


Tap on the Map button to move to the map and view field scouting results in progress. While in the map screen, you can switch back to the above Controls, Create a new polygon location, create a Proposed Treatment Area (PTA), or Finish.




You can switch between the Controls and the Map as many times as you like. When you press Finish, you will be presented with a summary of the scouting, grouped by polygon location. You can Edit the Site

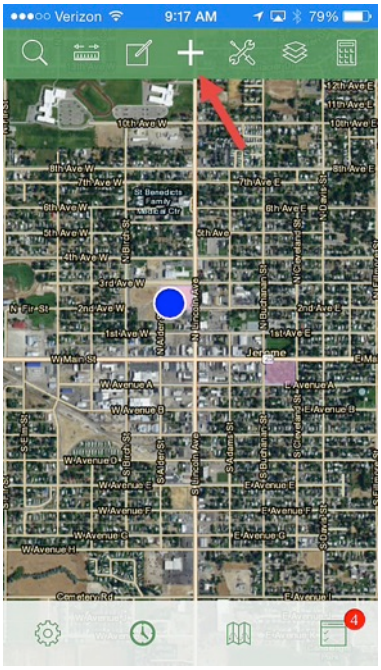
Visit information for each of the locations if you wish – for example, to enter in average larvae, larval stages, or field species.  When you press Submit, you will be notified if everything saves correctly.



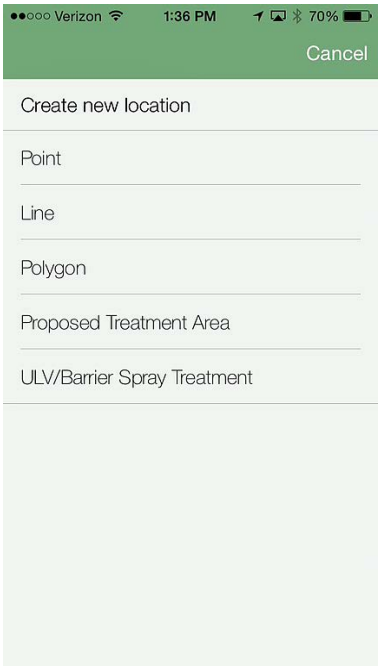

## Create New Locations

As you've already seen, a point, line or polygon location is used to attach activity records and service requests.  From time to time, or especially if you are creating new data from scratch in FieldSeeker, you will need to create new locations.  If a point, line, or polygon location doesn't exist on the map already to attach work to, then create one.

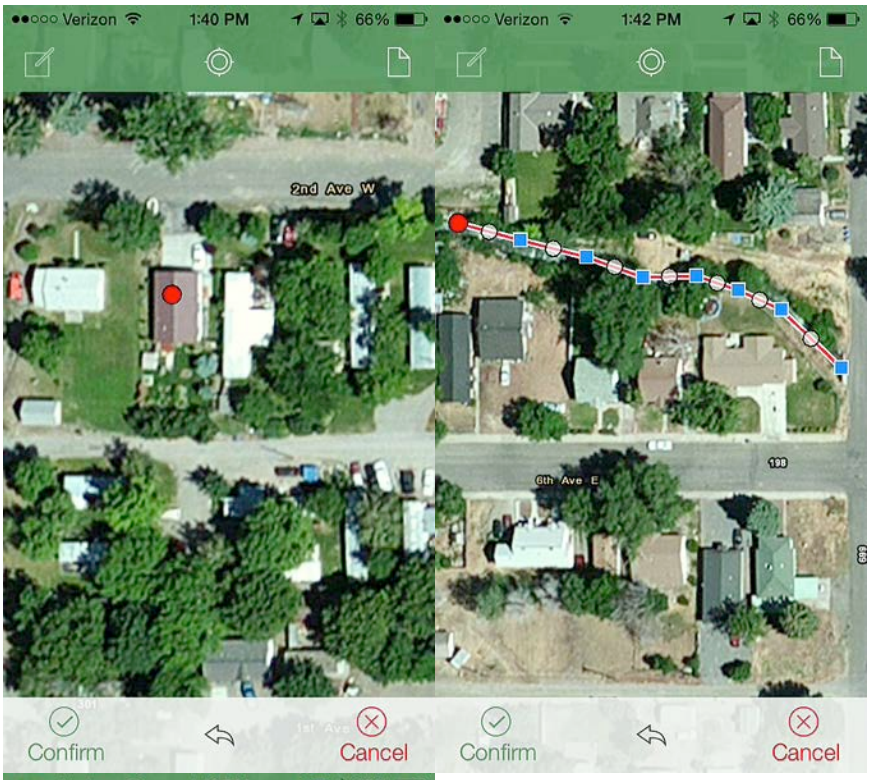
Tap Create New Location.

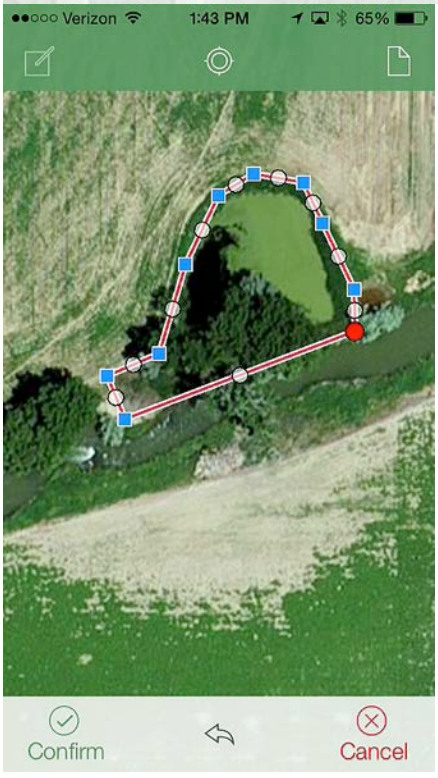



Select a point, line, or polygon location. (We will discuss other feature types in following sections.)




Draw the location on the map. If you are drawing a line or polygon, tap point by point to draw the shape. Tap on the Location tool (top middle) to add your current GPS position as a point. Tap the Undo button (bottom middle) to erase the last point you added.

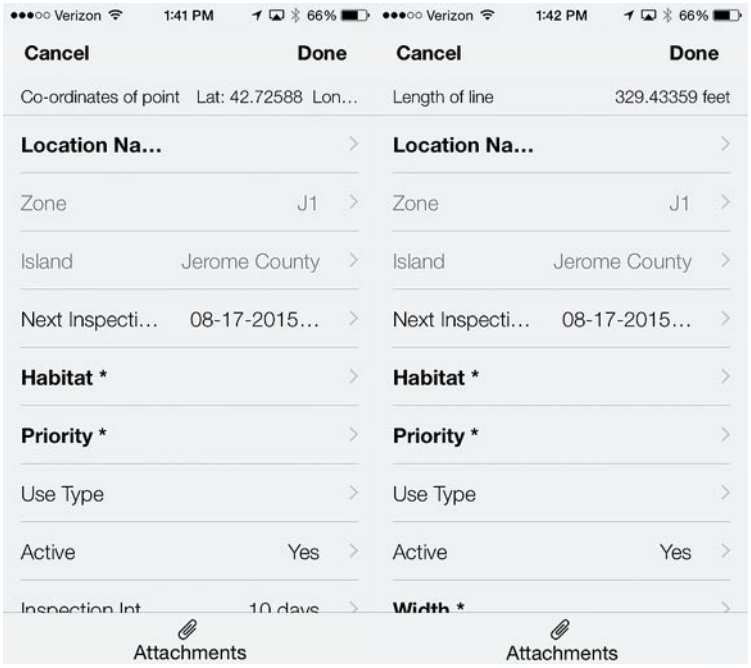


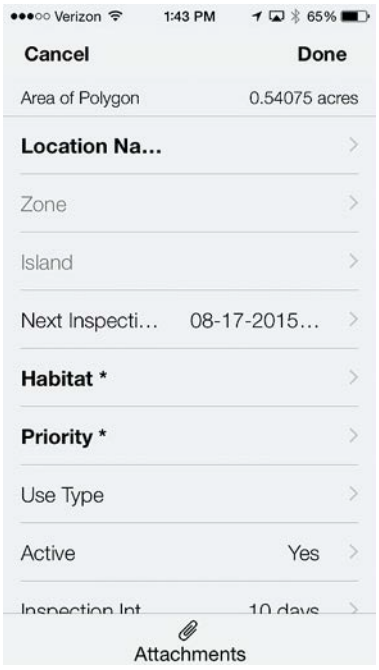




Tap the Attributes button (top right) to enter information for the location. Items in bold are required. Tap on an attribute to enter information. Depending on the type of data, you will get a text keypad, a numeric

keypad, a list, or a date control.  Remember that the keypad also has a microphone for voice-to-text for entering comments or access description.  Scroll down to see additional attributes.  Tap Attachments to add pictures if you like.

Point locations will show the Lat/Long at the top.  Line locations show the length (and require you to enter an average Width).  Polygon locations show the Area.

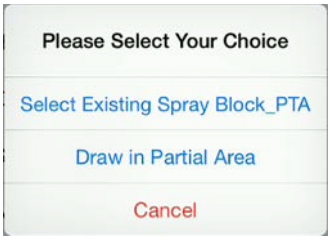


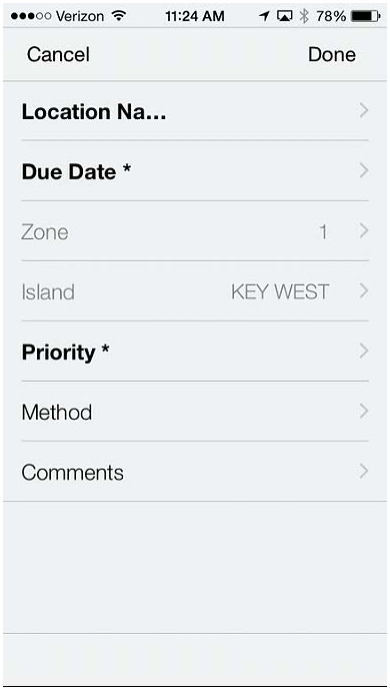
## Proposed Treatment Areas

Proposed Treatment Areas are a special location type.  They can be created from the Site Visit screen, from Field Scouting, or from the Add Locations list.

You will be asked to select an existing spray block or draw in a partial area.

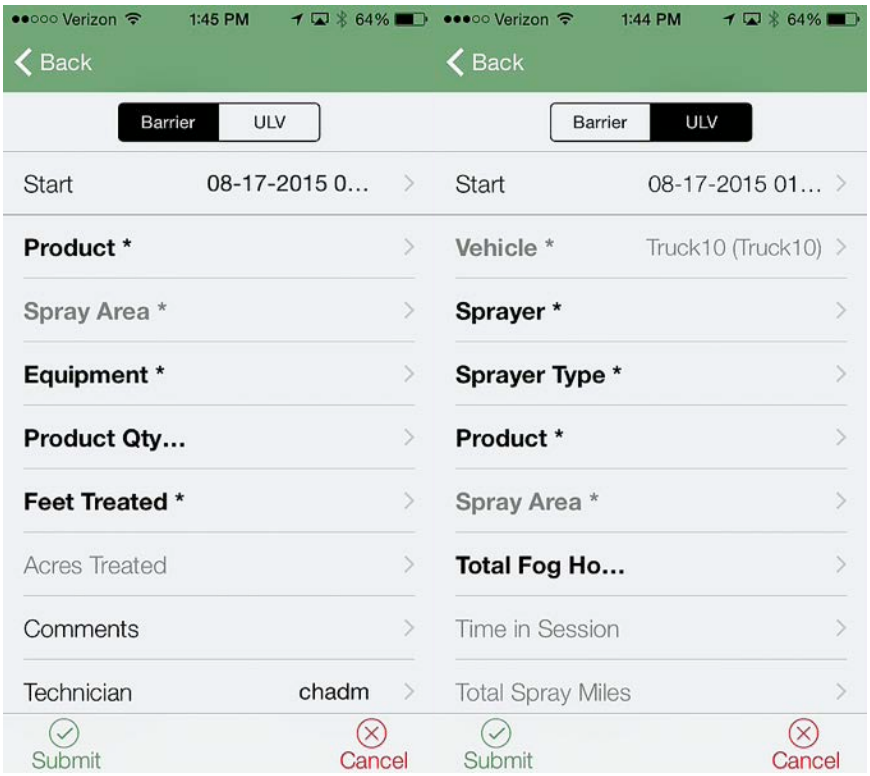



Then you will be prompted to enter in details for the Proposed Treatment Area, such as Name (e.g. spray block), Due Date, Method, Priority, and Comments.




## Barrier/ULV Spray

This is used to record a spray area, either as a barrier treatment or a ULV spray session.  Items in bold are required.  For barrier treatment, product quantity and linear feet are used to calculate acres treated. For ULV, total fog hours and sprayer calibration rate are used to calculate product usage and area treated.




## Working Offline

FieldSeeker Mobile for iOS works in connected or disconnected environments. By default, the mobile software assumes you are connected to the Internet. Whenever you record information of any kind, it is saved immediately to the server.

If you will be working in an area of poor connectivity, you need to download data ahead of time then go offline. The basic steps are:

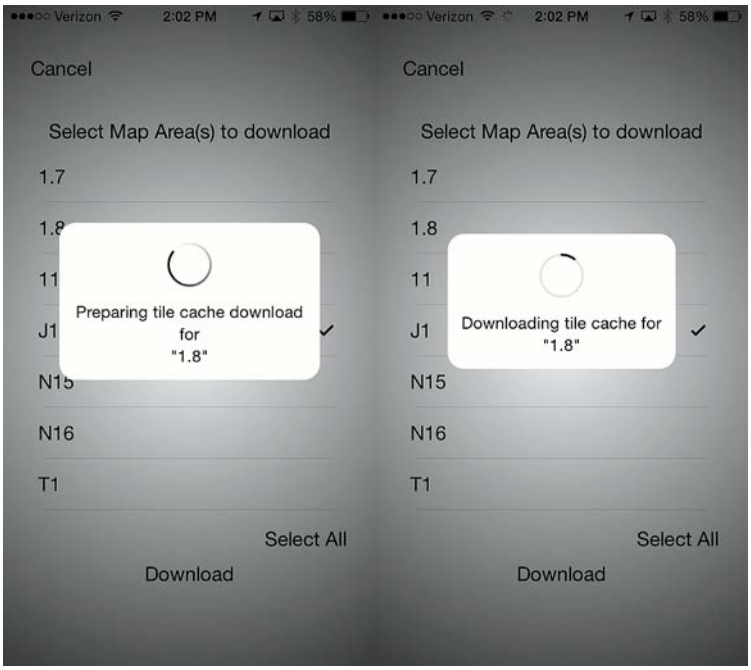
- Download Data (one-time operation)
- Go Offline
- Collect Data
- Switch Map Areas if needed and collect more data
- Go Online
- Sync

Subsequently when going offline, you would do the following:

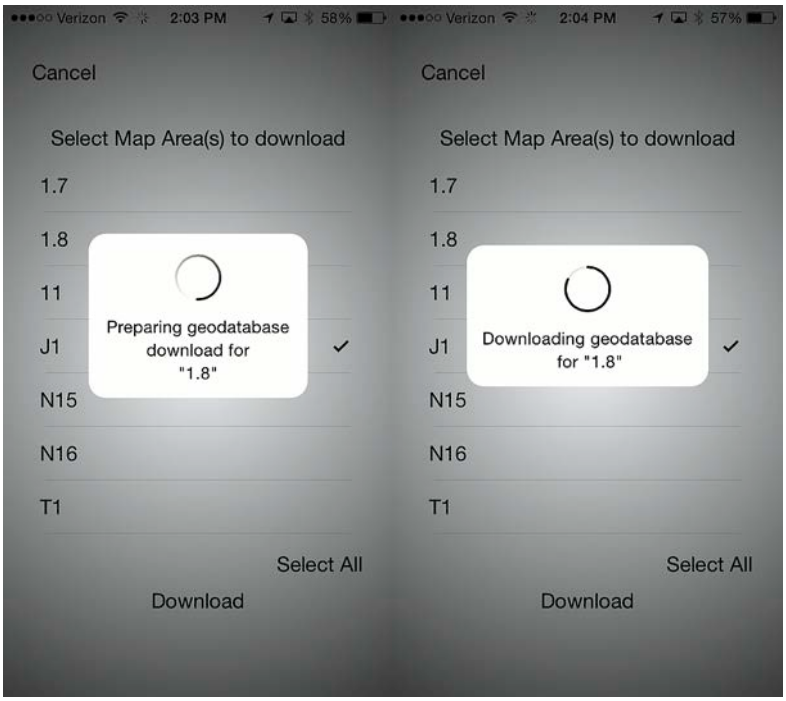
- Sync
- Go Offline
- Collect Data
- Go Online
- Sync

First, while in an area of good connection, go to Tools > Download Data.  Select which map areas to download.

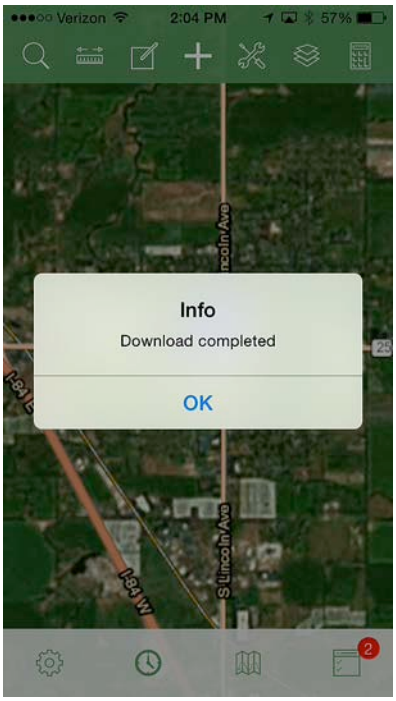

When you download data, the software will attempt to download an Esri imagery basemap first.  You will see a message “Preparing tile cache download” then “Downloading tile cache”.  If you would like to use your own data for a basemap, or have a basemap that covers a much larger area (an entire county rather than individual zones), it is possible to create your own tile package and load it onto the device using iTunes.  See the *FieldSeeker Deployment Guide*, available from Frontier Precision, for more information.



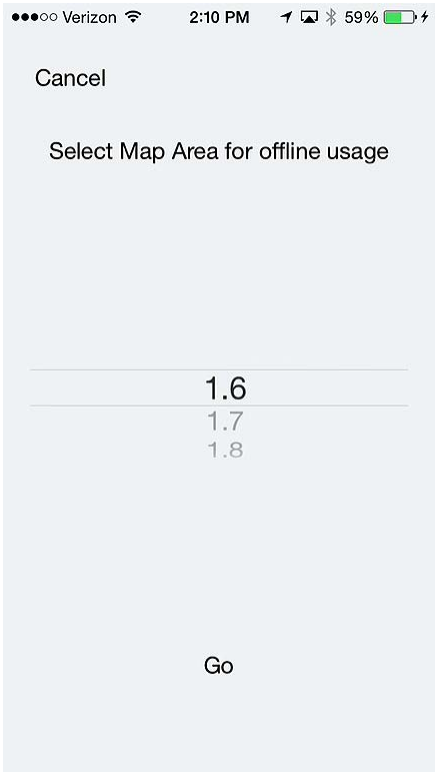

Then, it will download a geodatabase from your server. The geodatabase contains all your operational data – locations, service requests, activities, etc.



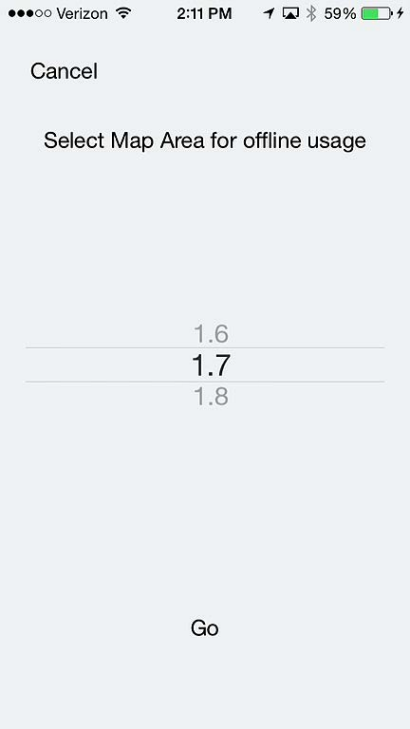

When downloading is completed successfully, you will see the following message.



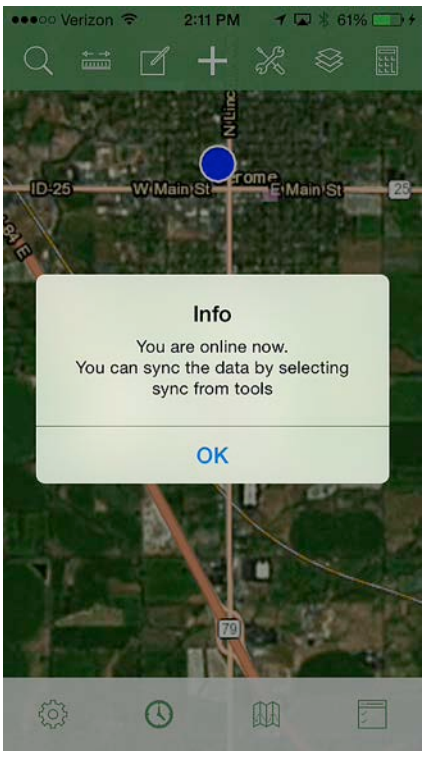

Tap Tools > Go Offline.  Select which map area to work in.



If you change areas, go to Tools > Switch Map Area.




When you are finished collecting data and are ready to sync, go to Tools > Go Online.



Go to Tools > Sync, select the areas to sync (or select all) then tap Sync.


## Offline Limitations

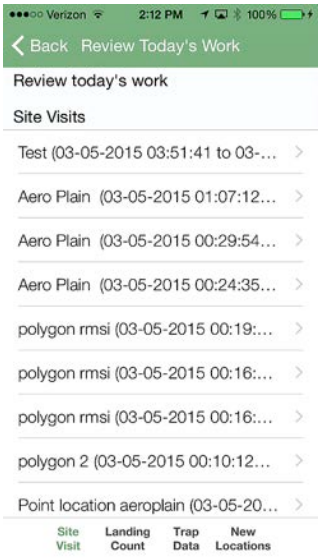
- Tracklog points that are automatically stored every 5 minutes cannot be saved if your location is outside the boundary of the offline map area
- New locations cannot be created outside the boundary of the offline map area (switch to a different map area first)
- Review Today's Work will show only the work in the current map area while offline
- Search Locations will search only the current map area while offline
- Popups for layers other than Locations and Proposed Treatment Areas are disabled while offline
- Time filter is disabled while offline
- Basemap selection is not available while offline (only Imagery or user-create tile package is available)
- Inventory tools are not available while offline (treatments still record inventory transactions but it is not possible to record transfers or reconciliations while offline)

## Review Today's Work

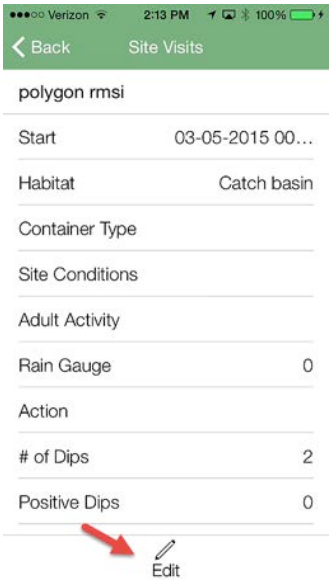
The current day's work for the logged in user can be reviewed and edited. (If you wish to view history for a location, use the pop-up > History or Search Locations > View Activity History; history is read-only.)

Tap Tools > Review Today's Work.

View all Site Visits, Landing Counts, Trap Records, QA Inspections (optional), and New Locations. Tap on the activity type at the bottom of the page to view a list of activities sorted in time order. Tap on a record to view full details.




Tap on Edit to change any data.

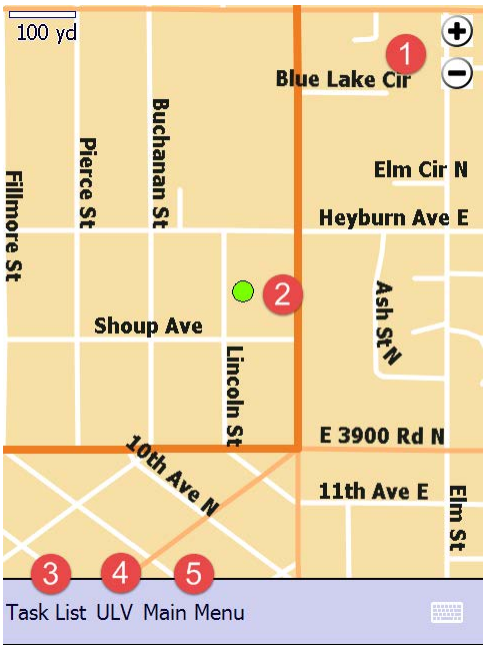



Make changes as required, then tap Submit to save changes.

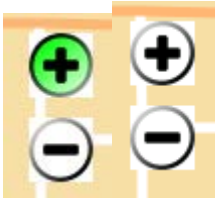
# Mobile ULV

## User Interface

After logging in (see the section below), FieldSeeker Mobile ULV defaults to a map view.




1. Map navigation tools – the default map action is Pan, so if no tools are selected you can tap and drag the map to pan. The map navigation tools are Zoom In and Zoom Out. Tap a tool once to select it. The tool will display with a green background. Tap again to deselect it.

   After selecting a tool, tap and drag on the map to perform the action.

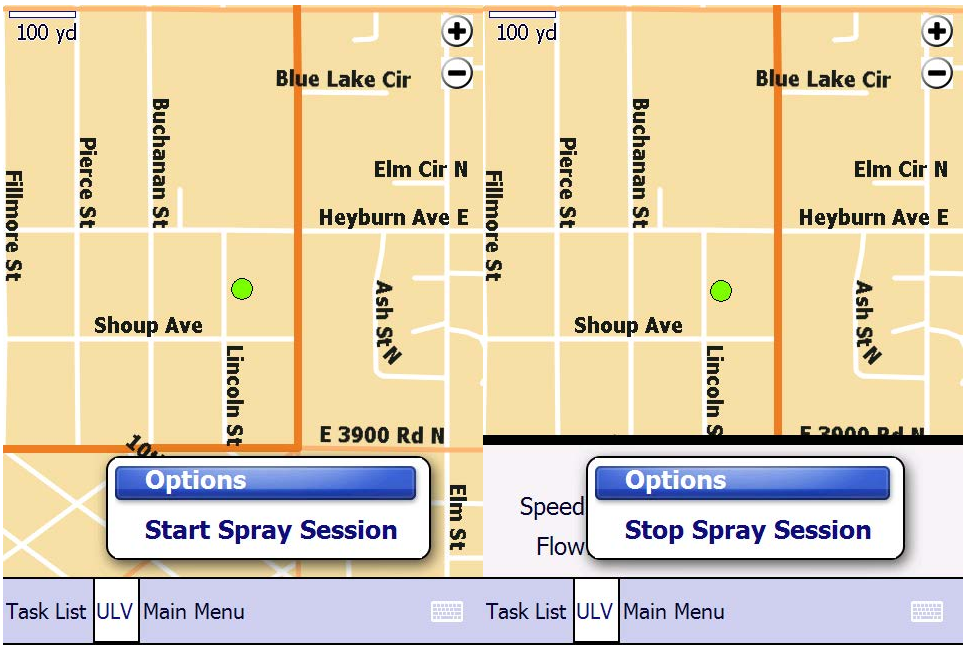
2. GPS position cursor – displays as a large green circle. If you are moving, it will also show an arrow indicating direction of travel.
3. Task List – displays a list of tasks, including Service Requests and Manage Edits.
4. ULV – view options, start and stop spray sessions.
5. Main Menu – displays a menu of options.

## Task List



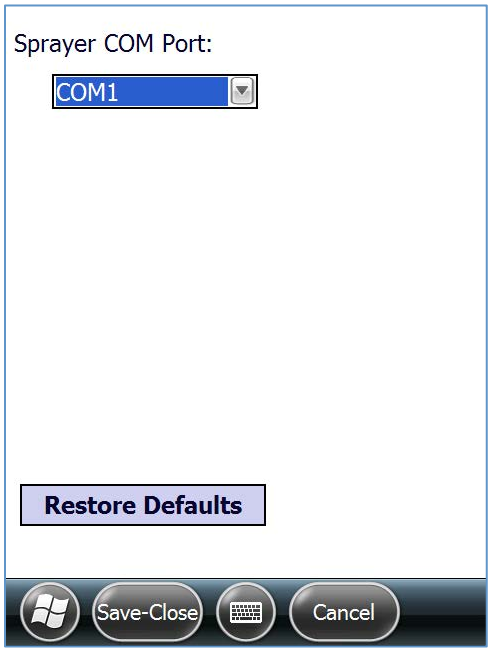
- View Service Requests – view and work with open and assigned service requests
- Manage Edits – send data you've collected to the server and download new and updated information from the server

## ULV Menu

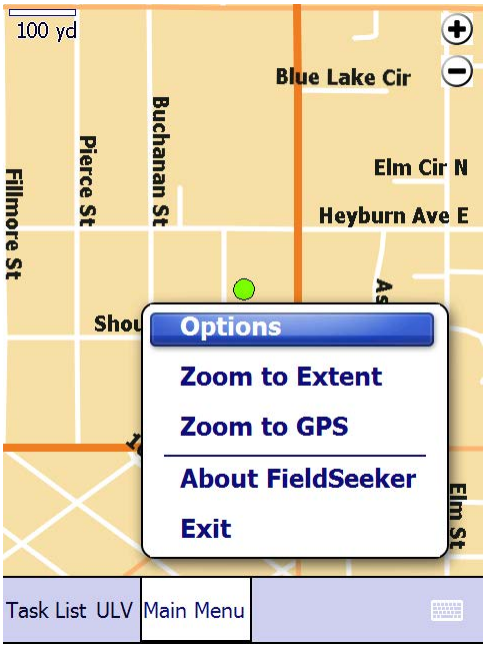



From the ULV menu, you can set Options and start and stop spray sessions.

On the Options page, set the Sprayer COM Port.




## Main Menu



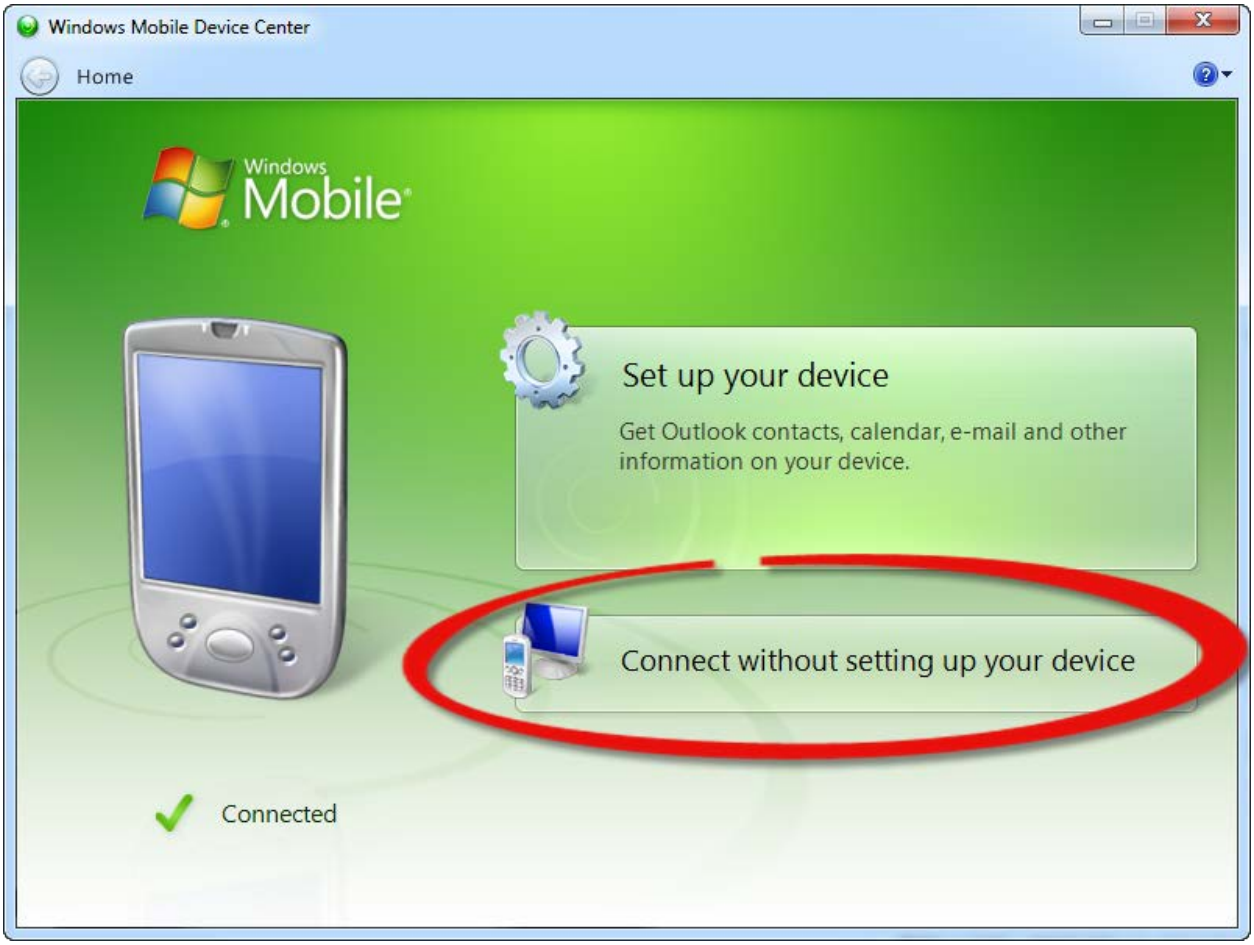

- Options – program options, including GPS settings and base map selection
- Zoom to Extent – zoom to the full extent of the map
- Zoom to GPS – zoom to current GPS location
- About FieldSeeker – displays the version and build date
- Exit – closes the program

## Login and Synchronization

FieldSeeker Mobile synchronizes data with an ArcGIS Server mobile service, which means that it has to have an Internet connection when data is synchronized. This happens first when the user logs in. Data is stored locally on the device in a "mobile cache" – a database file that keeps track of edits. You can then synchronize data whenever it's convenient by going to Task List > Manage Edits. You just have to have an Internet connection – through a Wi-Fi hotspot, cellular, or by connecting your mobile device to your desktop and sharing your Internet connection through Microsoft Windows Mobile Device Center.

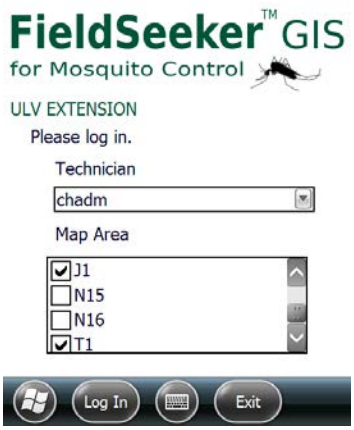
If you use Wi-Fi or cellular, you can verify that you have an Internet connection by going to Internet Explorer and going to a Website (such as www.google.com).

If you connect using Windows Mobile Device Center (WMDC), then you have to click the "Connect without setting up your device" button for WMDC to complete the connection and allow your Internet connection to be shared to the mobile device.

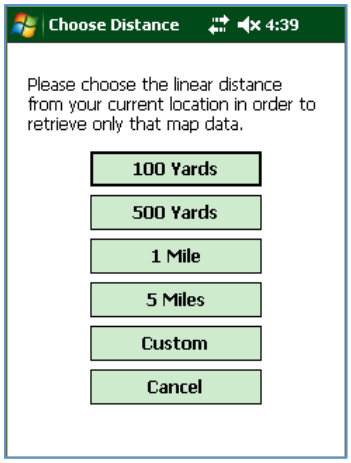


When you start the FieldSeeker mobile application the program will communicate with the server to retrieve a list of users and map areas.


When the login screen loads, select your user name and map area(s).




If map areas are not configured, choose the spatial extent: the whole map, or within a distance of your GPS position.

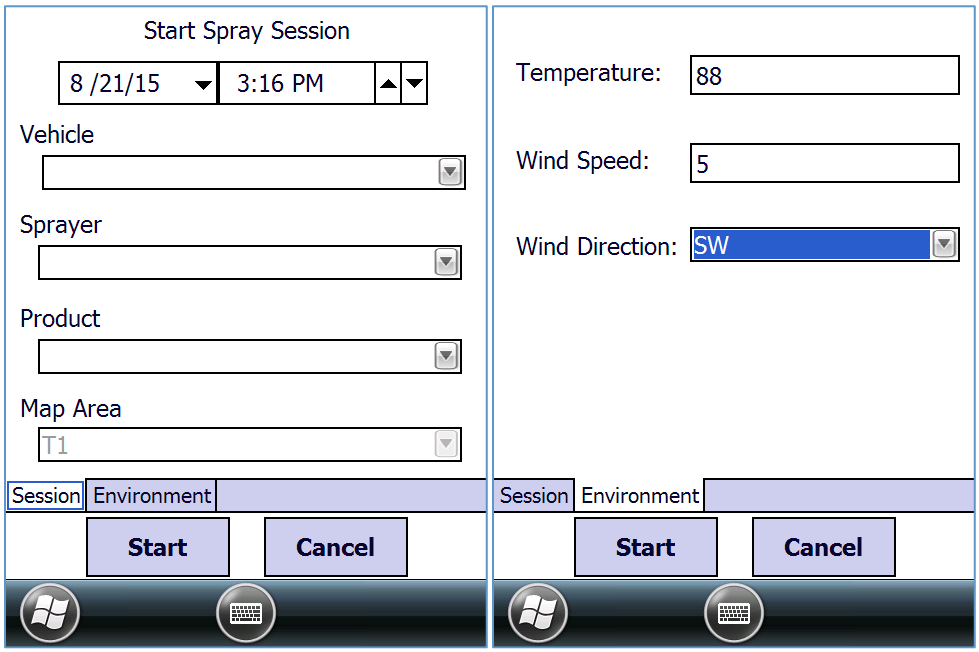



FieldSeeker will download all the service requests that are in the map area that are open or assigned to you, along with all the locations that go with those requests. After data is downloaded, FieldSeeker loads a map centered on your GPS location.

*Note: if you don't care about Service Requests while collecting ULV truck spray data, you don't have to be connected when you log in, except the very first time you run the software.*

## Collecting Spray Session Data

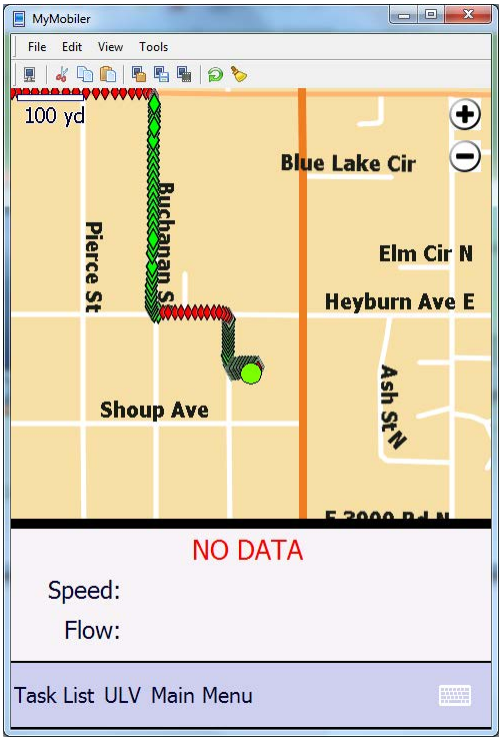
Tap the ULV menu and select Start Spray Session.




Enter in the start date/time, vehicle, sprayer and product. The Map Area will be automatically filled in based on your GPS location. Optionally enter environmental data on the Environment tab.

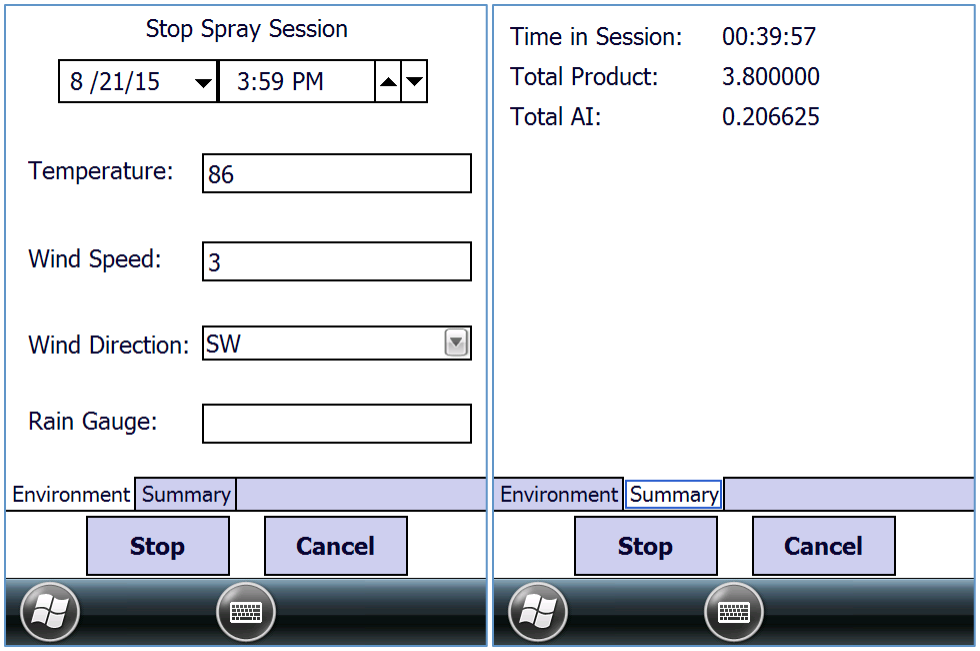
While a spray session is in progress, the speed, flow rate, and fogger status will be displayed near the bottom of the map screen.  Alerts and warnings will also display here.

Red and green triangles will begin drawing on the map.  Red = sprayer off; green = sprayer on.  The map will refresh every few seconds.




If you drive near a No Spray area, you will receive an audible alert, and the message will change to “NO SPRAY.”

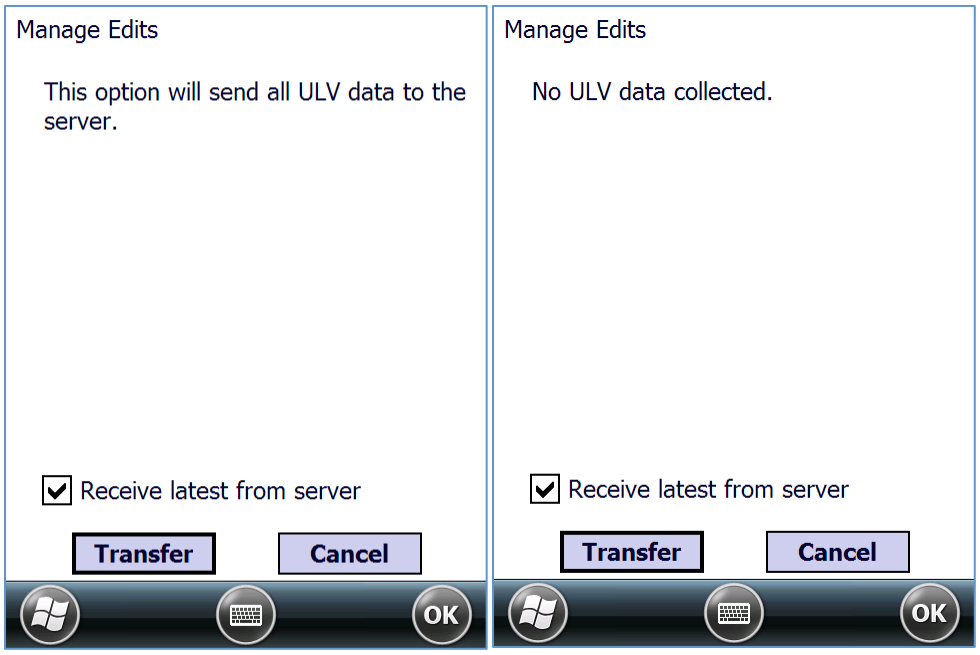
When you are finished spraying in one area, tap ULV then Stop Spray Session.  Enter updated environmental information if you wish.  Summary information for the spray session is also displayed.




If you have more spraying to do, you can start a new spray session at any time. You can have as many spray sessions as you like.

When you are finished spraying, make sure to stop any spray sessions in progress then go to Manage Edits to sync data before exiting the program.Task List

## Manage Edits

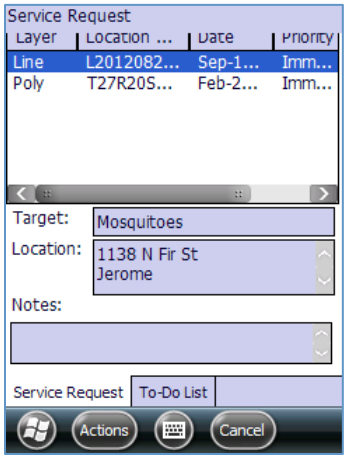


If ULV data has been collected, it will be processed and sent to the server. If not, the program will tell you "No ULV data collected." By default, the latest data for all layers will also be received from the server. Make sure you have an Internet connection then press Transfer.

The sync process will compress the mobile cache, transfer it to the server, then clear ULV data from the mobile device. When sync is complete, it will return to the main menu.



## View Service Requests




Open requests for your area and requests that are assigned to you will be displayed in the list, sorted from nearest to farthest away. Resize any of the columns or click on column headings to sort data.

You can view service request details, zoom to the request on the map, edit the service request, and enter field notes.

# Creating Reports

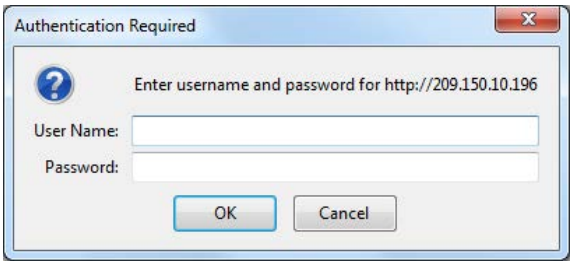
In FieldSeeker Web, there are several built-in search, query, and reporting tools. Search Locations, Search Service Requests, and Search Activities can all be used to find past or current work, view trends or spatial patterns, and export or print data. The map itself, with configurable map contents and time slider controls to view aerial spraying, ground spraying, trap results, landing counts, service requests, and other operational data, answers many questions in a visually compelling way.

In addition to these "ad-hoc reporting" and search / query tools in the Web application, there are a number of predefined reports described below. FieldSeeker uses SQL Server Reporting Services (SSRS) so that reports are easily modified or customized. SSRS provides a powerful, flexible platform for reporting that is secure and easily accessible through a Web browser. New reports can be developed independently of FieldSeeker software, and you have full access to the entire data model.

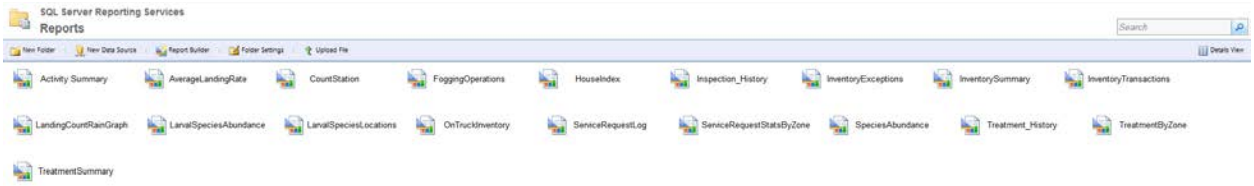
For more information about deploying or configuring FieldSeeker Reports, see the *FieldSeeker Deployment Guide*, available from Frontier Precision.

From FieldSeeker Web's main menu, select Reports. *Please Note: Microsoft recommends using Internet Explorer for SQL Server Reporting Services reports.*

Depending on how your database administrator set up security, you may be prompted for a login.




After you are authenticated, you will see a list of available reports. Your list of reports may be different than the following list.




**Activity Summary** – a summary of all activities for a given time period, including total service requests, rainfall averages, total landing rates, total traps, total inspections, and total treatments by type.

**Average Landing Rate –** average landing rate and rain fall for landing count sites.

**Count Station** – landing counts and rainfall per location and zone, showing daily counts and averages.

**Fogging Operations** – map of fogging operations for given time period, with list of locations affected.

**House Index –** calculation of house index per zone for given time period (% of inspections with positive identification of given species).

**Inspection History** – inspection history for given time period for selected location(s).

**Inventory Exceptions** – shows any field treatments that were recorded that were outside of configured application range.

**Inventory Summary –** shows inventory usage by tech and product, including transfer, reconciliation, and treatment amounts. Also shows magnitude of reconciliation adjustments expressed as a percentage of treatment usage.

**Inventory Transactions –** shows inventory transactions for a given date range and truck.

**Landing Count Rain Graph** – shows the same information as the Average Landing Rate, but includes a graph.

**Larval Species Abundance –** shows species abundance information for larval samples identified in the lab.

**Larval Species Locations –** shows a map of locations where given species was identified from larval samples.

**On Truck Inventory –** shows current on-truck inventory.

**Service Request Log –** shows service request details for given time period, zone, category, and status.

**Service Request Stats by Zone –** shows statistics such as counts by category and average time to close per zone.

**Species Abundance** – shows species and abundance information for adult trapping.

**Treatment History** – shows treatment history for given time period for selected location(s).

**Treatment by Zone –** shows treatments for given time period, grouped by product and zone.

**Treatment Summary** – shows total product usage and area treated for given time period.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