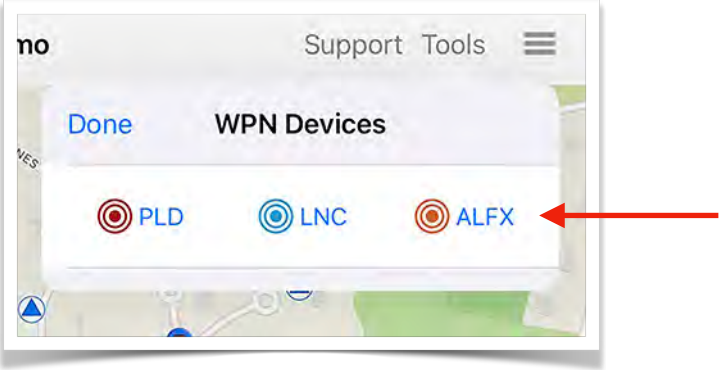
ALFX Follow-up Guide

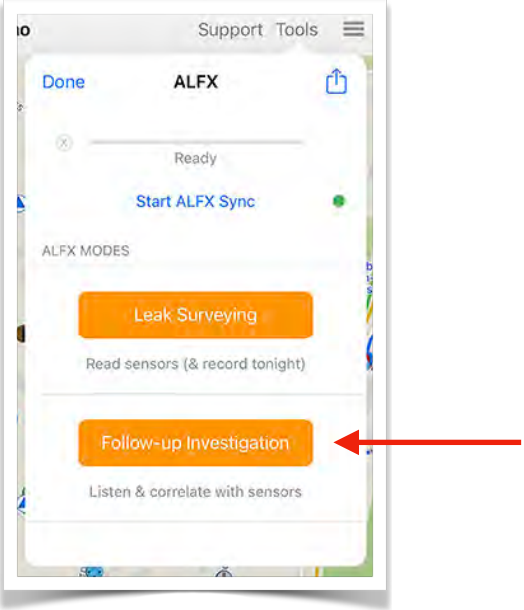
Prepare for Follow-up Investigation

A. Log in to your WPN2 account with the ALFX cloud credentials provided by 64seconds: login email and password.

B. In the Map view, tap Tools -> ALFX



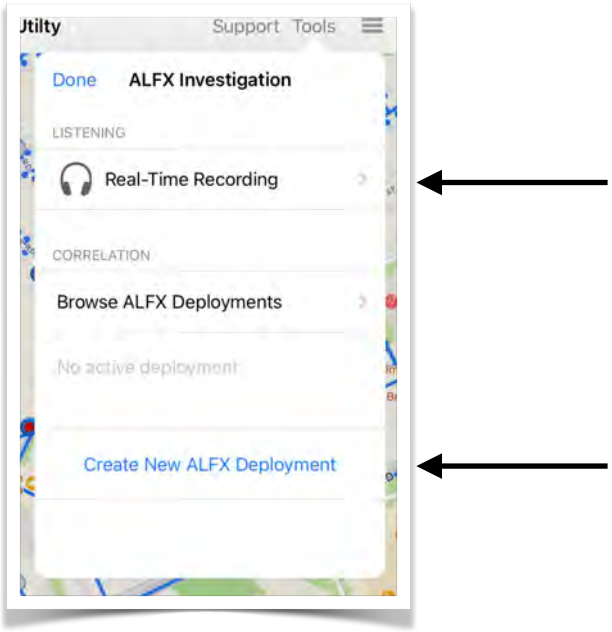
C. In the ALFX Main view, tap the **Follow-up Investigation** button.



D. Turn on the ALFX Controller by touching the magnet to the target symbol on the endplate of the Controller (the red LED will illuminate.)

E. There are four options available in the ALFX Investigation view:

1. **Real-Time Recording:** Live-stream sound from a sensor to record and listen now.
2. **Browse ALFX Deployments:** Review historical deployments and their correlations.
3. **Active Deployment:** Select the deployment with the correlation recordings made at 3:00 AM after the most recent survey reading.
4. **Create New ALFX Deployment:** Deploy ALFX sensors to correlate between one minute and 24 hours from now.

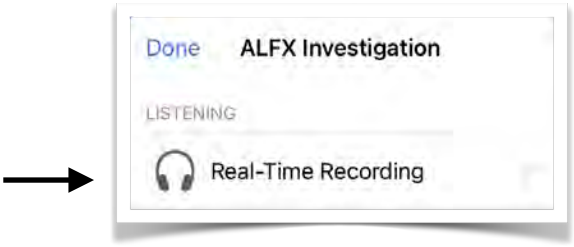


F. by listening and/or correlating. To start a correlation deployment, tap Create New ALFX Deployment. To begin listening, tap the Real-Time Recording row (see page 8 of this guide for listening features).

Follow-up Investigation Options

Real-Time Recording

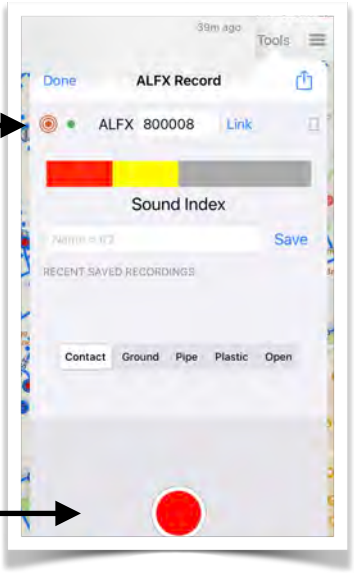
To listen to the sounds at the ALFX sensor in real time, tap on Real-Time Recording.



Make sure the ALFX sensor's serial number is entered into the text box.

If the green dot next to the target is not illuminated, or to change to a different sensor, tap **Link**.

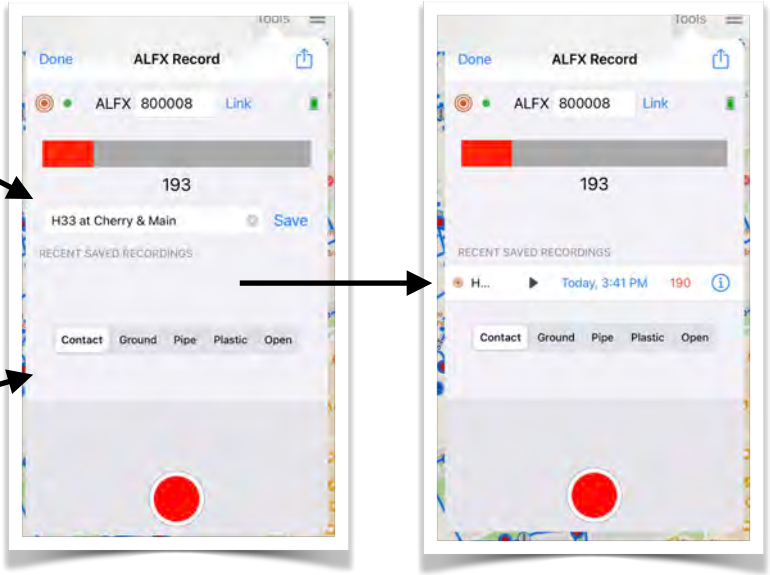
Tap the record button to listen to a real-time recording of the sounds at the ALFX Sensor.



To save the recording permanently, enter a name for the recording in the text box and tap **Save**.

The recording will now appear under Recent Saved Recordings and will be uploaded to the cloud during cloud syncing.

Select any of the filters to listen for the best leak sounds based on the listening environment.

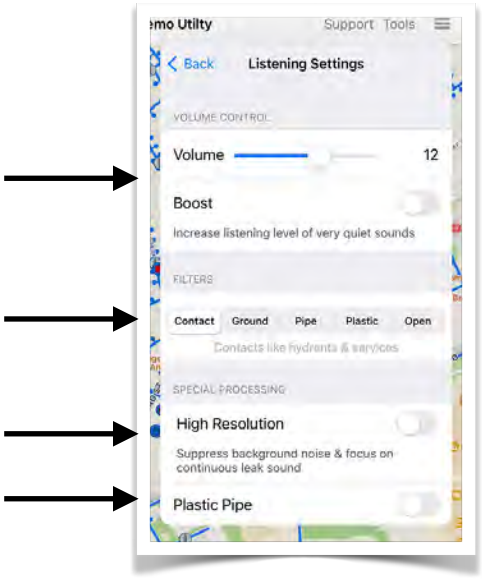


Advanced Listening Options

Tap on the Action button (top right corner of the ALFX Record view). Then, tap **Listening Settings**.

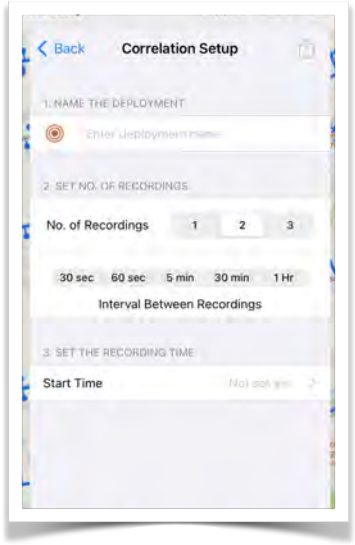
In the Listening Settings view, you can

- Set volume control and turn on “Boost” which increases the listening level of very quiet sounds.
- Select among five different filters: Contact, Ground, Pipe, Plastic and Open.
- Turn on Special Processing:
  - High Resolution - Suppresses background noise and focuses on continuous leak sound
  - Plastic Pipe - Shifts energy to a higher, audible frequency



Filter	Contact	Ground	Pipe	Plastic	Open
Description	Hydrants, valves, other connection points	Asphalt, ground probe in soil / sand	Direct contact	PVC / PE pipe	Passes all frequencies

Correlation Setup



1. Name the Deployment

Tap the text box and enter a name for your new deployment.

2. Set the number of recordings - 1, 2, or 3

Multiple recordings are useful to distinguish leaks from disturbances like usage transients or environmental noise like traffic or nighttime sprinklers.

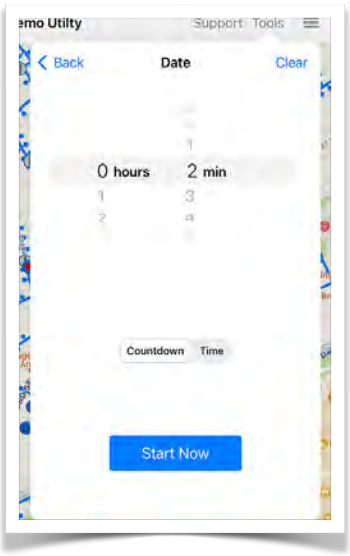
For multiple recordings, set the interval between recordings. An interval of 30 to 60 seconds is typical during the day and 5 or 30 minutes can be useful at nighttime.

3. Set the time for the first recording

Tap on Start Time row. During the day that is usually a *Countdown* of 4 to 15 minutes - sufficient time to deploy a few sensors. To schedule a recording up to 24 hours in the future, tap *Time* and select the 24-hour time.

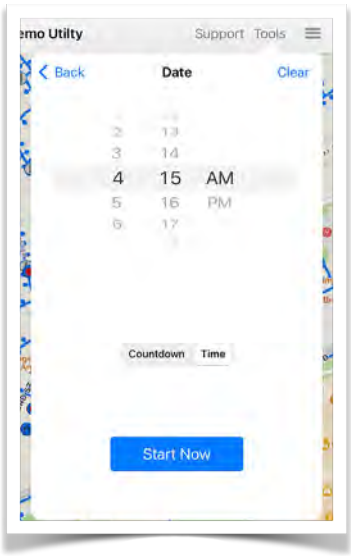
In the Date view, tap Start Now to return to the Correlation Setup view.

Countdown



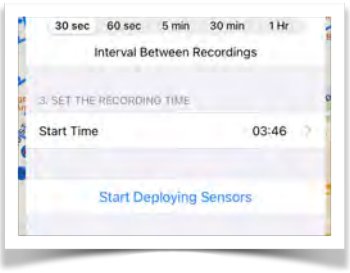
OR

Time



4. Start Deployment

Back in the Correlation Setup, tap **Start Deploying Sensors** to enter the Deploy view.



Deploying Sensors

1. Enter the serial number of ALFX Controller

Then tap **Link** to connect to the controller. The target icon and the dot next to it will turn green when you are connected to the controller.

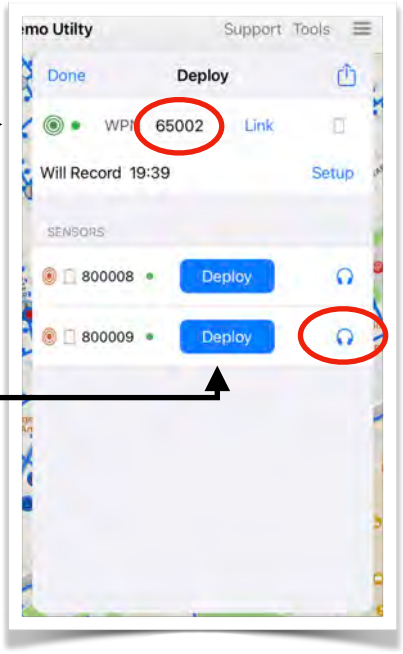
You can find the 5 digits of the serial number on the label of the controller.

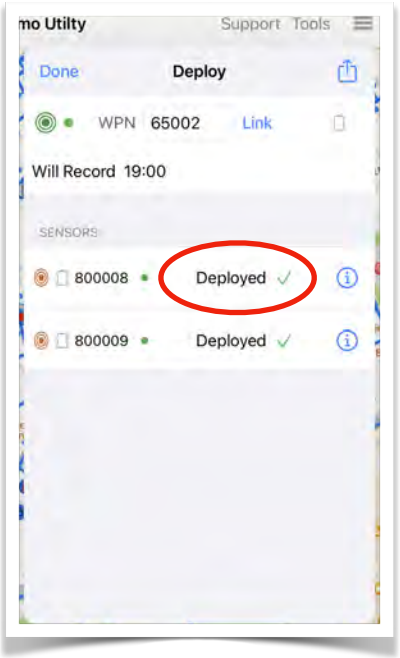
2. Optionally listen to the sensor's sound

Tap on the headphones icon for a sensor. In the Real-Time ALFX Record view you can listen to the sensor's sound in real-time (see the Real-Time Recording section on page 4 for more information.) After listening, tap the Done button in the top left corner to return to the Deploy view.

3. Deploy each of the ALFX Sensors

Tap the Deploy button to synchronize the sensor with the controller and schedule recording for the sensor. A green check (✔) appears on success. You may continue deploying sensors until about 20 seconds before the recording start time.

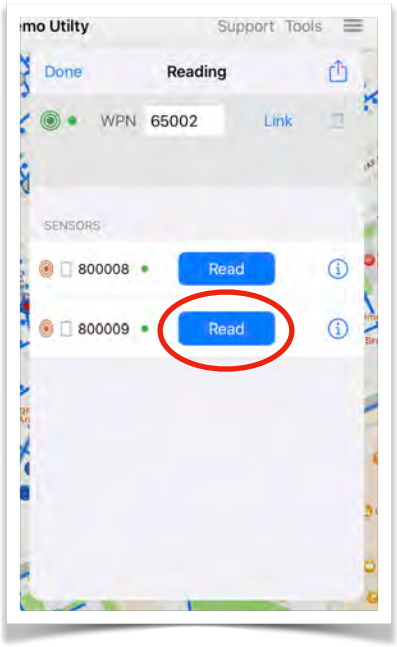


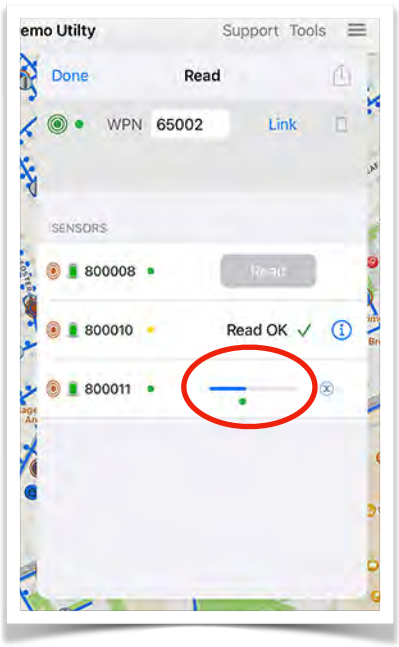


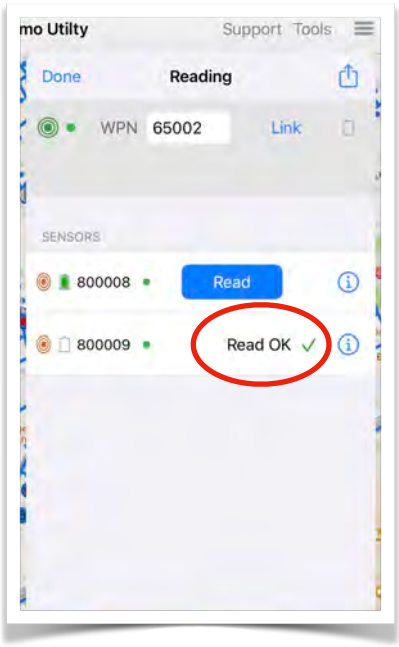
Reading Sensors

1. Read the Sensors after the recording has completed

After the sensors have completed their recordings, the Read buttons will appear next to the sensors. Tap the Read button next to a sensor. You will see a progress bar while the data is transferred to the WPN2 App. Wait until you get the green check before you read the next sensor.

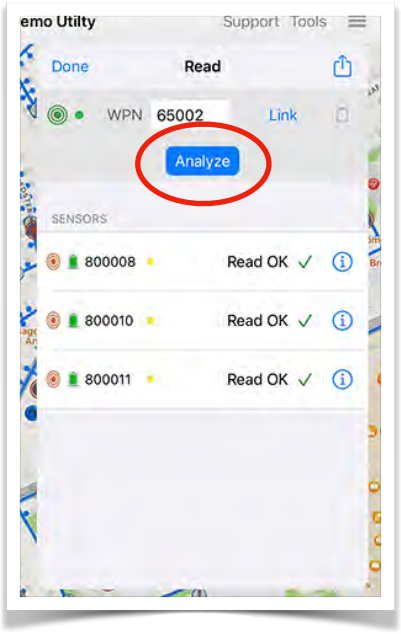






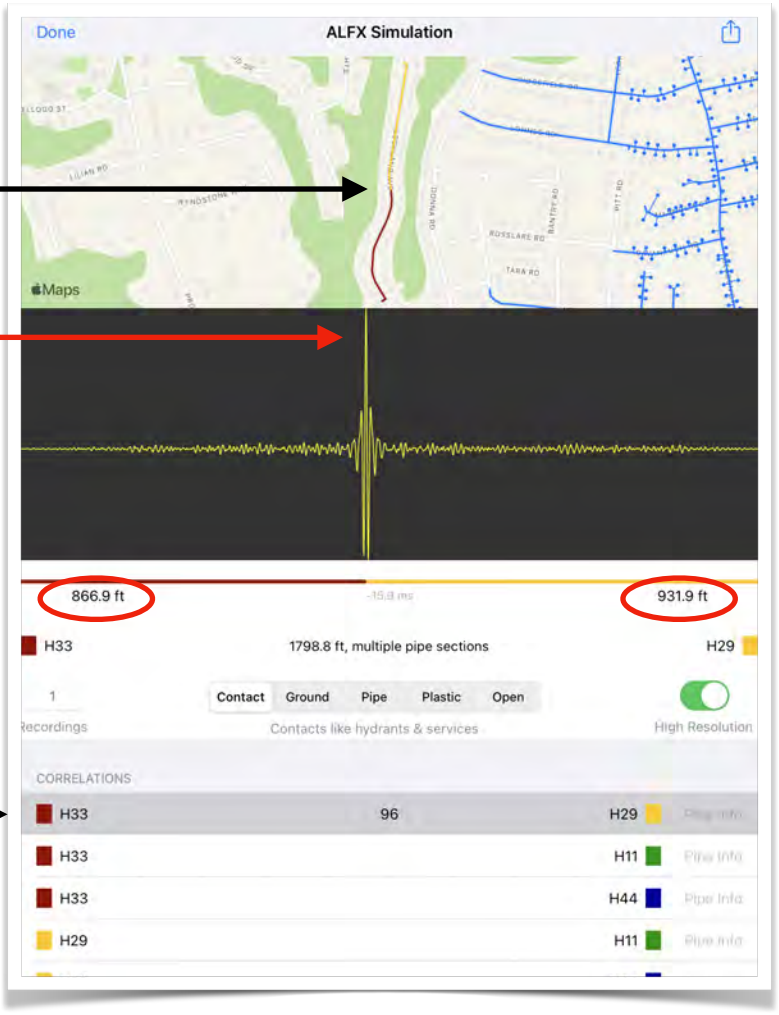
2. Correlation Analysis

Once all sensors in the deployment have been read, tap the Analyze button to be taken to the Analysis view.



Correlation Analysis

The map shows the shortest pipe route between colored sensors (■ ■). The paths meet at the point of the suspected leak, which corresponds to the highest peak in the correlation graph.



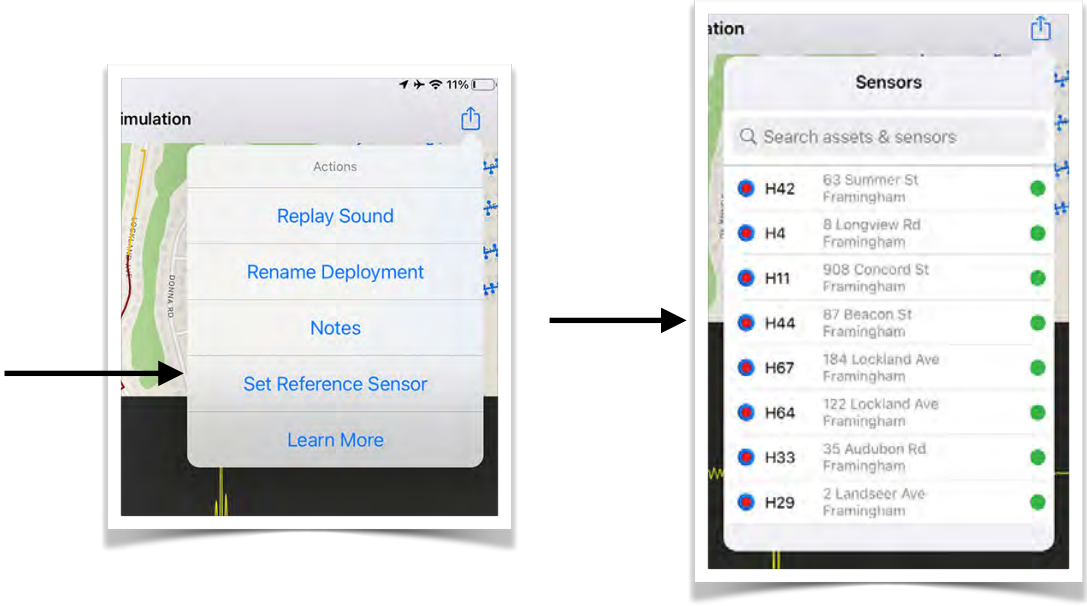
The exact distances between each sensor and the leak are shown: 866.9 feet from the sensor on H33 and 931.9 feet from the sensor on H29.

A set of correlations has a reference sensor (■) and its three nearest neighbors (■ ■ ■).

The first correlation pair of the ALFX sensors is on hydrants H33 and H29.

Each correlation has a score between 0 and 100. Higher numbers have more confidence in an accurate pinpointing of the correlating sound source.

Tap on the Action button in the top right corner to **Set Reference Sensor** and then tap a new reference sensor / hydrant from the list.



You will automatically be sent back to the Analysis view. Notice the first sensor in the first row of the Correlations table is now H44.

Tap the first row in the correlations table and the correlation view will update based on the new reference sensor.

Filters

High Resolution - This is the default setting. It suppresses background noise and focuses on the continuous leak sound.

Contact - Used for hydrants, valve operating nuts, general ferrous connection points

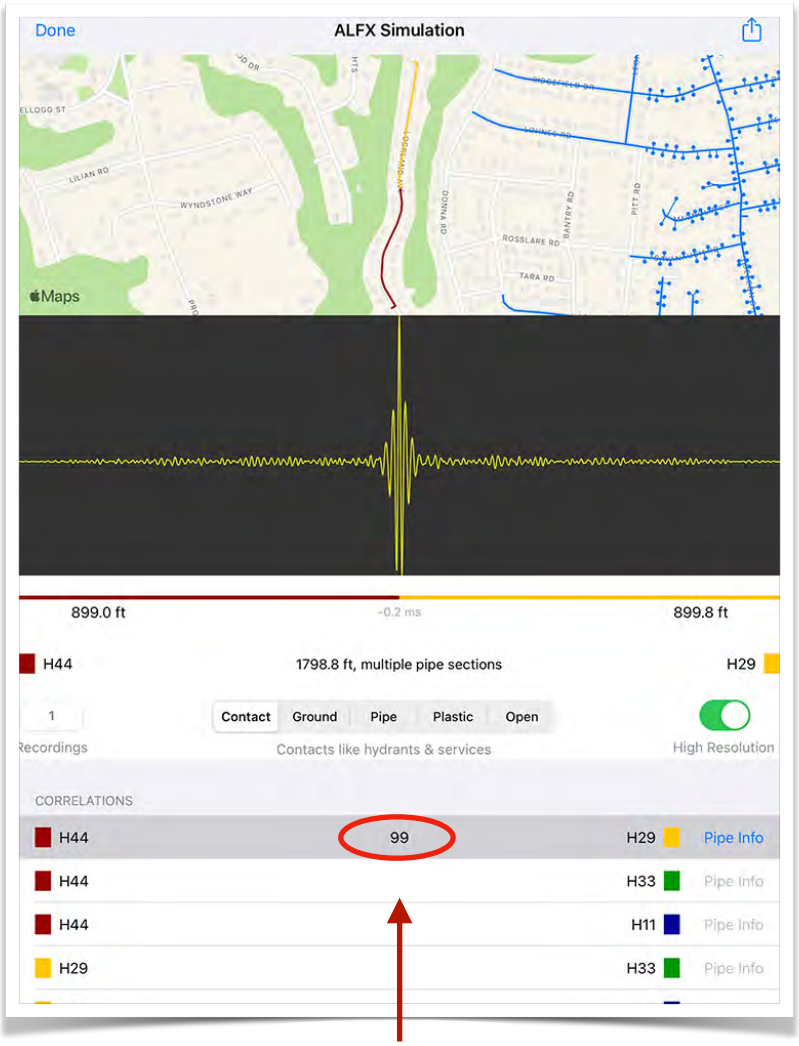
Ground - Used for asphalt or listening on other surfaces with a probe

Pipe - Used for direct contact with a pipe

Plastic - Used with PVC mains

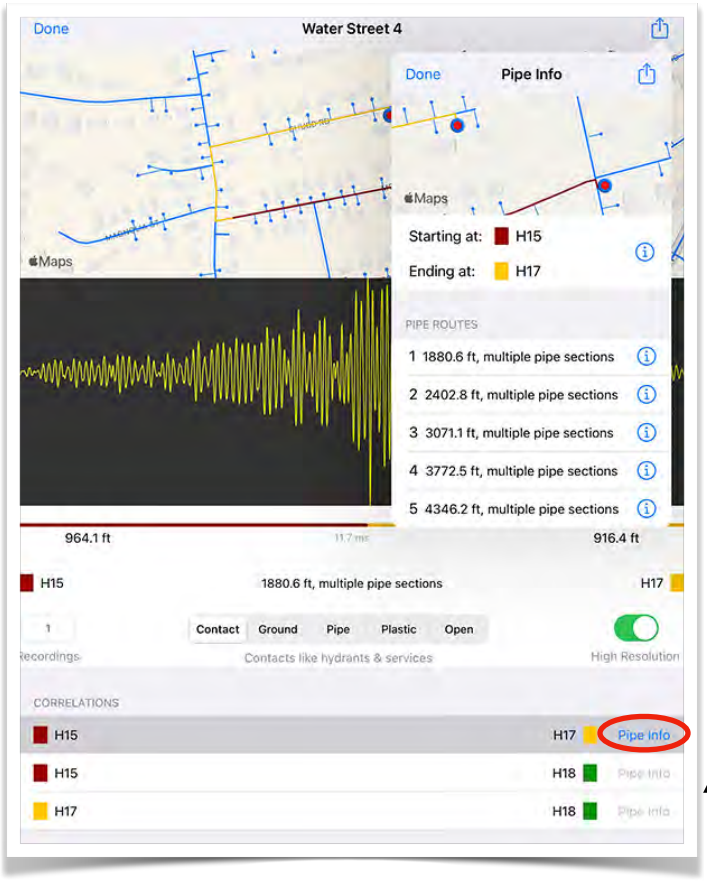
Open - Allows all frequencies to pass

Generally, Contact and Ground are the go-to settings. Pipe can be useful because it restricts frequencies to typical leak sound energy on 4 - 8" pipe. Plastic and Open are rarely used, but results can be compared with Contact/Ground for insights. Any frequency setting can be tried in any situation. Selecting high-resolution reduces transient noise and makes the choice of filter less important.



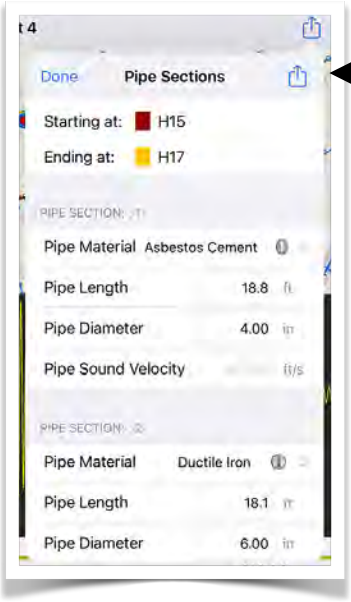
The number in the center of the row is the correlation score which ranges from 0 to 100. The higher the number the higher the confidence in the leak location

Pipe Information



Tap here to view the ALFX sensors installed on these hydrants.

Tap here to view or edit pipe section information, like material, diameter or sound velocity, for each pipe route.



Tap on Pipe Info to open the Pipe Info view.

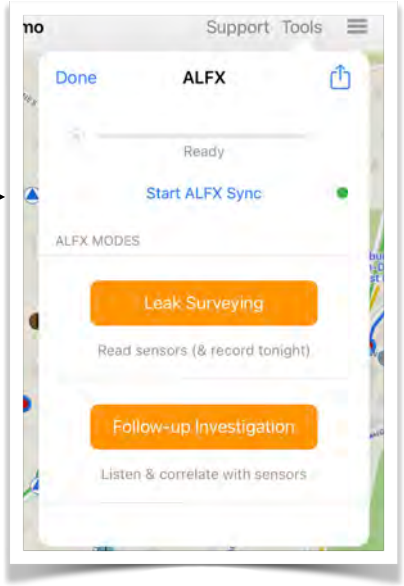
Add another section of pipe by tapping on the Action button and selecting Add Pipe Section.

Cloud Syncing

After follow-up / investigation activities have been completed for the day, in the ALFX Main view, tap **Start ALFX Sync** to sync the analysis results with the ALFX Cloud.

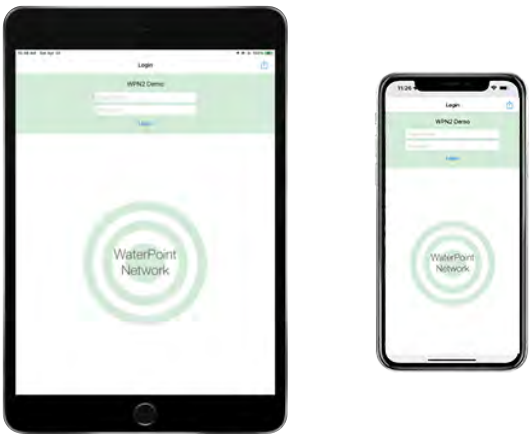
If the dot to the right of **Start ALFX Sync** is green, then you are online and able to sync. If it is yellow and Start ALFX Sync is grayed out, it means the WPN2 app is offline and you cannot sync now.

The surveying data has been saved, so you will be able to sync later, when you have a strong Wi-Fi or cellular signal.



Items Needed for Follow-Up

A. iPad or iPhone with 64seconds' WPN2 app installed.



B. ALFX Controller & Controller Holder mounted on the inside of the survey vehicle's windshield

Slide the ALFX Controller into the ALFX Controller Holder. Affix the Controller Holder to the windshield in a central position, for example, under the rearview mirror, by removing the tape from the back of the attached velcro strip.

Windshield position.