2017

Landfill E-Forms Instruction Manual: Android Application

Members:

Alfredo Aleman, Alvin Quach, Allen Huang, Chris Ow, Grant Kang

City of Los Angeles, Department of Sanitation

5/12/2017

Sponsored by:

CAL STATE LA
CALIFORNIA STATE UNIVERSITY, LOS ANGELES

User Manual for LEF

Landfill e-Forms

Created by the Senior Design group members at California State University Los Angeles

Advisors: Russell Abbott and Sue Lim

Contents

Introduction

Introduction

Welcome

Welcome to the Landfill e-Forms User manual. Thank you for giving the Senior Design students at California State University Los Angeles the opportunity to work with you on this exciting project. We hope you will be pleased with the results.

Purpose

The LEF is a combination of applications used to convert the City of Los Angeles Department of Sanitation's methane emissions auditing system to a paperless system to improve efficiency, reduce human error, and speed up report production. This LEF will consist of the team developing two applications: a mobile application and a web application for desktop use.

Android Application

The mobile application will be developed for the Android Operating System and will be aimed towards on-field use. The user will be able to enter and search data on the mobile device, as well as sync with a private server hosting the database. The mobile application can **only** be used on portrait mode.

Getting Started

Getting Started

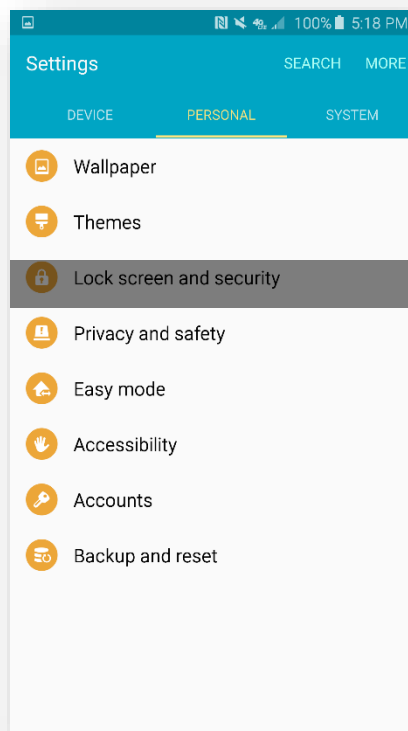This section will discuss how to set up the Android application.

Android Requirements

- The minimum API level that this application supports is API level: 22 (Android 5.1 Lollipop)
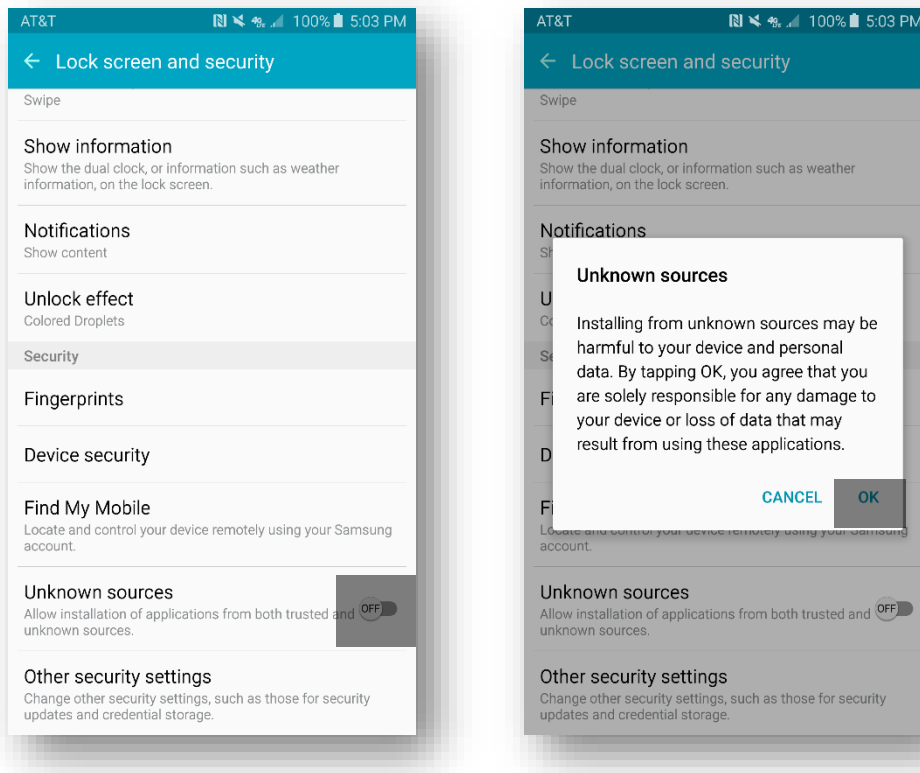
Installing with APK

If you already have the landfilleforms-debug.apk file on your phone and you wish to install it, please do the following:
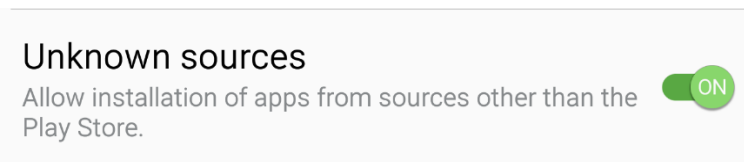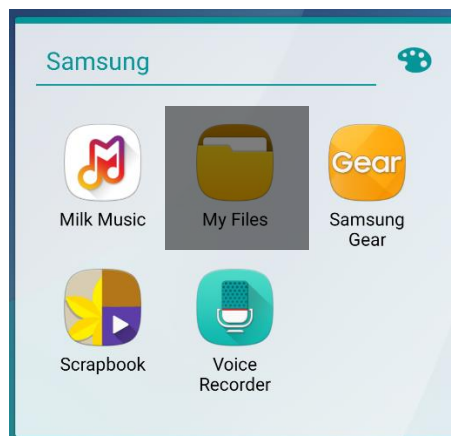
o Go to Settings ⚙ > Lock screen and security

o Scroll down and click on "Unknown Sources", press ok. Unknown Sources should be turned on.
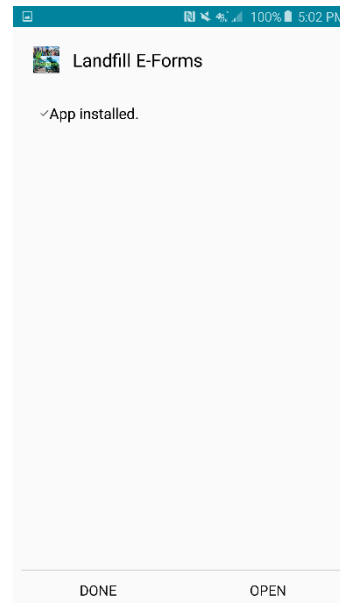
- o Unknown Sources should be turned on. It should look like this:

- o Now go to your "My Files" application > Device Storage > scroll down to locate the landfilleforms-debug.apk. Click on the APK > install > and press ok.
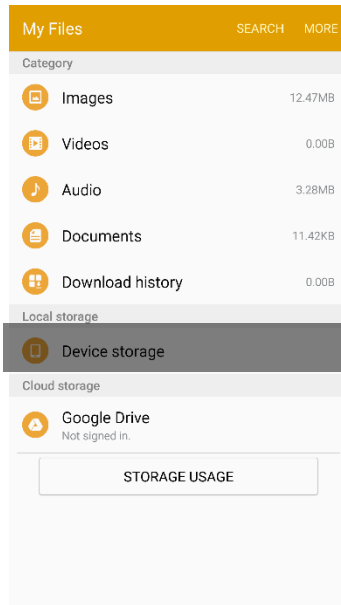
- o Go back to Settings ⚙ -> Lock screen and security
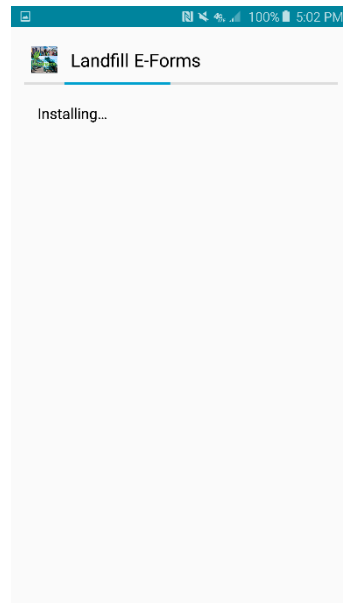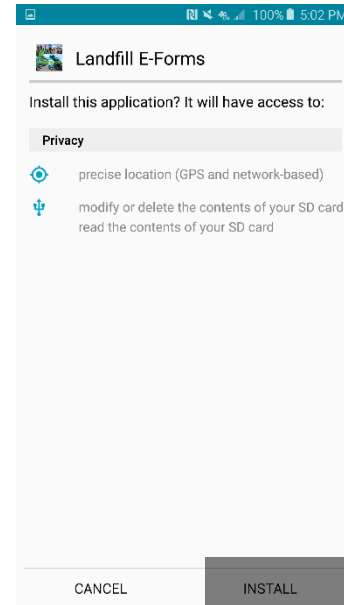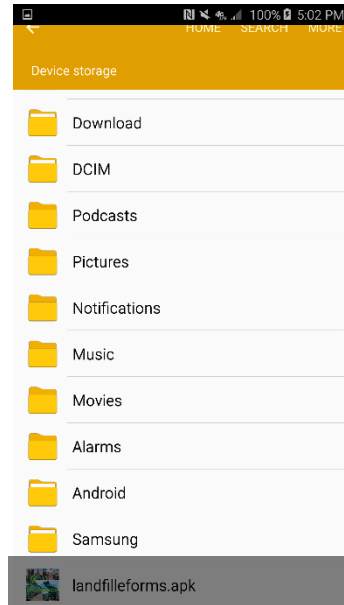- o Scroll down and click on "Unknown Sources", press ok. Unknown Sources should be turned off.
- o Confirm that Unknown Sources is turned off. It should look like this:

Unknown sources

Allow installation of applications from both trusted and unknown sources.　OFF
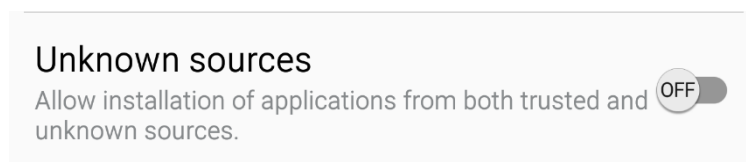
- o Enjoy the application!

***Note**: This is a generic guide to installing the APK, and this may not work for other phones. (Tested on Samsung Galaxy Note 5).

Android Application

Android Basics

Opening the Application
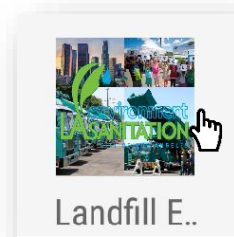
Landfill E..

- To open the application, click on the Landfill E- Forms application.

Logging In

To login, enter your username and password.

 Note: The username is not case sensitive, but the password is.

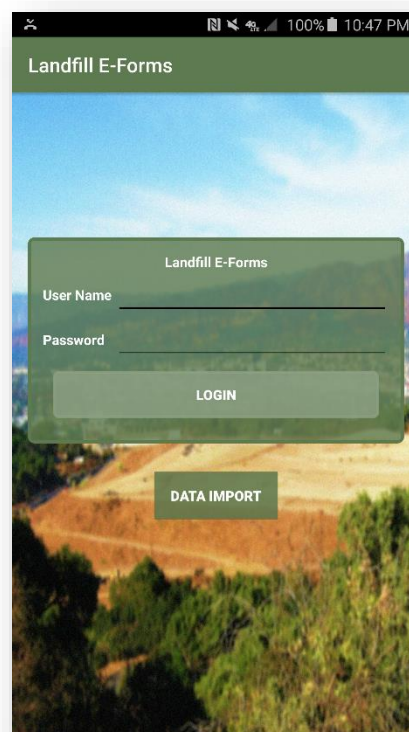Upon successful login, you will be redirected to the Home screen. Entering an invalid username and will prompt a message indicating that the user has entered an invalid username or password. This message will pop up at the bottom of the screen.

Invalid Username/Password Combination.

In the case where you forget your password, you will not be able to access your account. **Always** make sure to remember your password.

Helpful Tips

Before heading out to the field, log onto your phone to ensure that you have access to the application when taking data.

The Data Import button is used to import the data from the Web Application. More information about how to import the data will be discussed towards the end.

① Home Screen and Menu

The Home screen displays your name and a welcoming text. The home screen also contains the main menu.
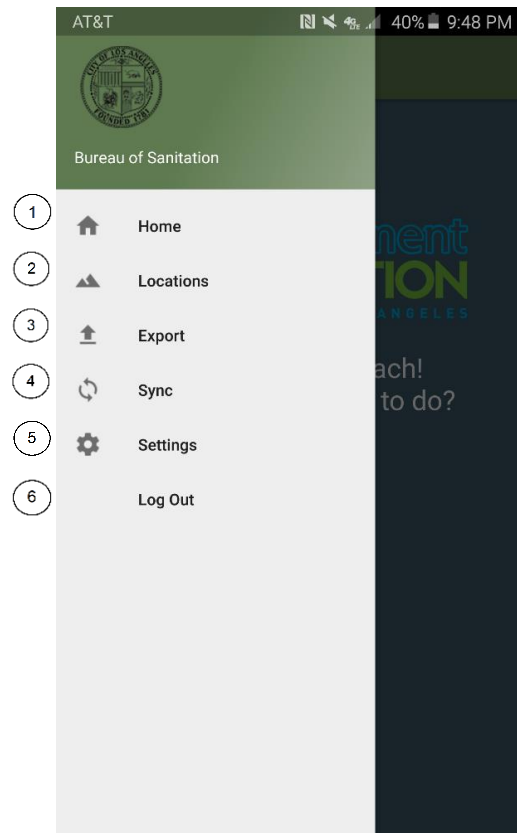
Pressing the hamburger button will expand the menu. There are different activities you can choose from:

① Home
  o Pressing the Home button will navigate your back to the Home Screen.

② Locations
  o Pressing the Locations button will navigate you to the locations screen.

③ Export
  o Pressing the Export button will navigate you to the export screen.

④ Sync
  o Will be implemented next year.

⑤ Settings
  o Will be implemented next year.

⑥ Log out
  o Will log you out.

② Locations

You can access Locations by pressing the "Locations" button on the menu.
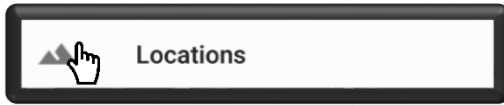
You will then be redirected to the Landfill Locations page.
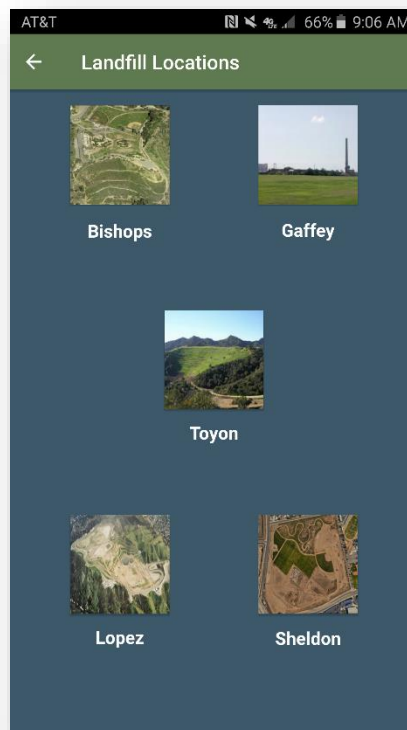
The Landfill Locations page contains pictures of the current sites you will be working on. The following locations are available:

- Bishops Canyon
- Gaffey St. Landfill
- Toyon Canyon
- Lopez Canyon (Includes Lopez Canyon Environmental Center)
- Sheldon Landfill

By pressing on the desired location, you will be redirected to the Tests page.

Tests
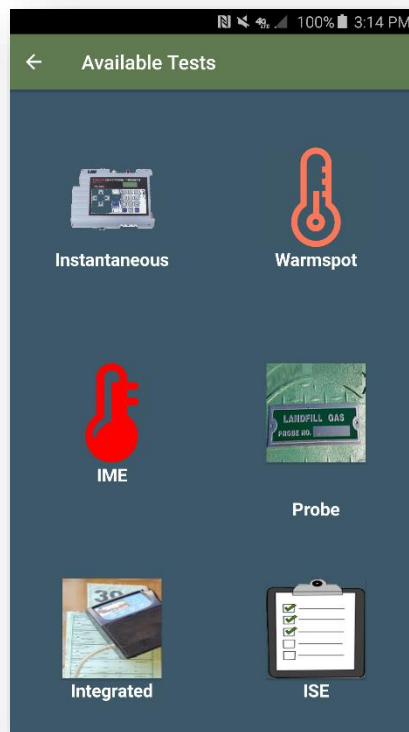
The Available Tests page contains the tests that an Environmental Compliance Inspector uses when recording data. The following tests are currently available:

- Instantaneous
- IME
- Warmspot
- Integrated
- ISE
- Probe

By clicking on the desired test, you will be redirected to a list of the corresponding test entries.

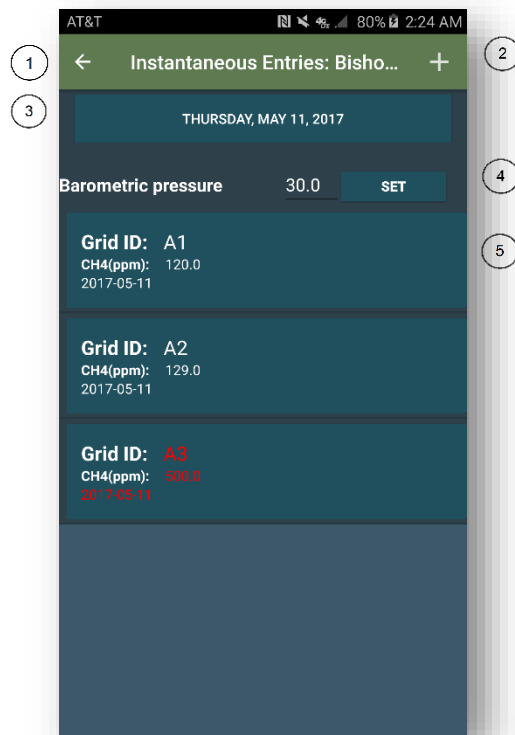# Tests: Instantaneous Entries

Clicking on the Instantaneous icon will direct you a list of Instantaneous entries.

① **Back Button**

  o Supposed to redirect you back to the Available Tests page.

② **Add an Instantaneous Entry**

  o Directs you to the Instantaneous form page. You can enter Instantaneous information here.

③ **Date Filter**

  o Filters the Instantaneous list, depending on the date chosen.

④ **Barometric Pressure**

  o Allows you to set the barometric pressure.

⑤ **Edit Entry**

  o Allows you to modify Instantaneous Information in that entry.

Adding an Instantaneous Entry

Adding an Instantaneous entry is as easy as clicking a button. The inspector field, location, and date, start time, end time, and barometric pressure are already filled out for you.

1. Delete the Instantaneous Entry
   - When clicking this button, a warning will pop out that will confirm if you want to delete the entry.

   - After deleting the entry, text will appear confirming the deletion. You will then be redirected to the list of Instantaneous entries.
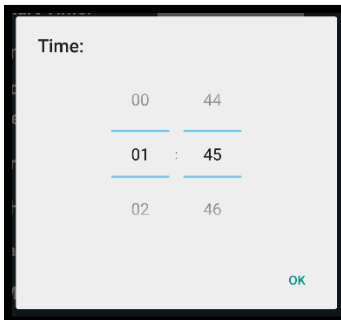
2. Setting your Start Time

- o Set the start time of the Instantaneous Entry. By default, the time is set when you press the ➕ button on the Instantaneous Entry page.
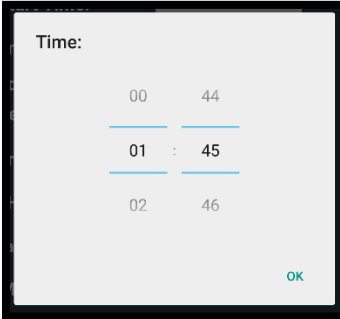- o You can also manually change the time by clicking on it.

Time:

00		44
01	:	45
02		46

OK

③ Setting your End Time

- o Set the end time of the Instantaneous Entry. By default, the time is set 30 minutes after you press the ➕ button on the Instantaneous Entry page.
- o You can also manually change the end time by clicking on it.

Time:

00		44
01	:	45
02		46

OK

④ Setting Equipment SN (Serial Number)

- o The Serial number chosen from equipment.

⑤ Setting the Grid ID

- o You can select the Grid ID from the drop-down menu. The entries in the drop-down menu differ for each location.

⑥ Setting CH_4 Reading

- o You can set the methane reading in ppm for a grid.

⑦ Barometric Pressure

- o The barometric pressure is pre-set to default at 30.0 Hg, but you can modify this.

⑧ Submit Button

- When you are done filling out the Instantaneous entry, you can press the submit button to save the entry. If the CH_4 is between 200-499, a warning will appear asking if you would like to add a Warmspot entry.

New Warmspot

CH4 levels are between 200-499! There is a Warmspot. Navigate to Warmspot form?

NO   YES
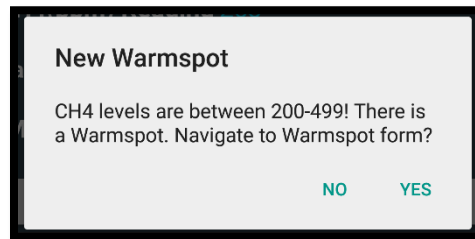
- From there, you will be redirected to the Warmspot form.

- Alternatively, when you press the submit button when the CH_4 is greater than 500, a warning will appear asking if you would like to add a IME entry.

New IME

CH4 levels are over 500! There is an IME! Navigate to IME form?

NO   YES

- When you select **YES**, you will be redirected to another warning, which will ask if you want to add to an existing IME or create a new one.

IME Navigation

Would you like to create a new IME or add to an existing one?

CANCEL   CREATE A NEW IME   ADD TO EXISTING

- After you finish adding the desired number of IMEs and Warmspots, simply press **Submit** again and click on **NO.** This will exit the Instantaneous form and will add the entry to the list. You will then be redirected back to the list of Instantaneous entries.

Tests: Warmspot Entries
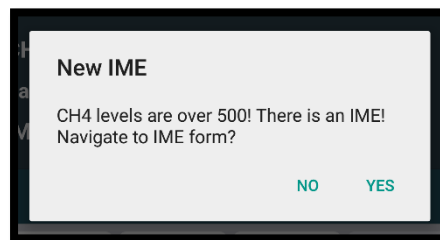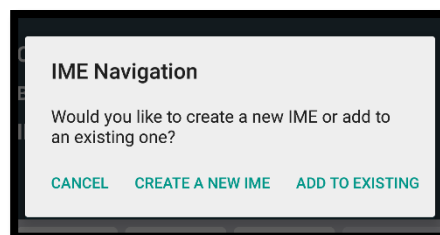
Clicking on the Warmspot icon will direct you a list of Warmspot entries.

① Back Button

  o Supposed to redirect you back to the Available Tests page.

② Add a Warmspot Entry

  o Directs you to the Warmspot form page. You can enter Warmspot information here.

③ Edit Entry

  o Allows you to modify the Warmspot Entry.

Adding a Warmspot Entry

Adding a Warmspot entry is as easy as clicking a button. The inspector field, location, and date fields are already filled out for you.

1. Delete Warmspot Entry

    o When clicking this button, a warning will pop out that will confirm if you want to delete the entry.

    o After deleting the entry, text will appear confirming the deletion. You will be redirected to the list of Warmspot entries.

2. Setting the Grid ID

    o You can select the Grid ID from the drop-down menu. The entries in the drop-down menu differ for each location.

3. Estimated Size

- o You can enter the estimated size for the Warmspot here

④ Setting CH$_4$ Reading

- o Allows you to set the methane reading in ppm for a grid.

⑤ Setting Equipment SN (Serial Number)

- o The Serial number chosen from equipment.

⑥ Setting the Description

- o Allows you to write any description you would like about the Warmspot here.

⑦ Setting the Date

- o Allows you to set the Date for the Warmspot entry.

⑧ Submit Button

- o When you are done filling out the Warmspot entry, you can press the submit button to save the entry. After doing so, text will appear to confirm the addition. You will be redirected to the list of Warmspot entries.

The Warmspot entry has been added to the list.

Tests: IME Entries

Clicking on the IME icon will direct you a list of IME entries.
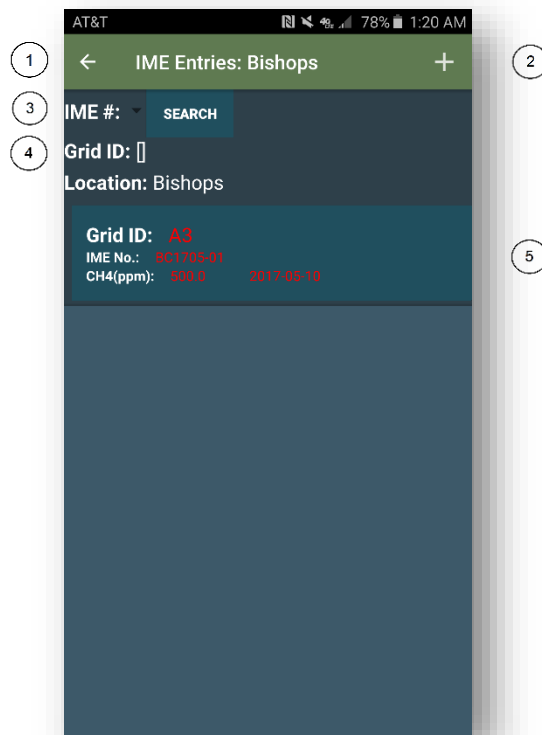
1. **Back Button**
   - Supposed to redirect you back to the Available Tests page.

2. **Add an IME Entry**
   - Directs you to the IME form page. You can enter IME information there.

3. **IME filter**
   - Allows you to filter the IMEs. Doing so will allow you to access the desired IMEs faster instead of scrolling down to locate it.

4. **Grid ID**
   - Shows the current grids that have an IME associated with it.

5. **Edit Entry**
   - Allows you to edit the IME entry.

Adding an IME Entry

Adding an IME entry is as easy as clicking a button. The inspector field, location, and date fields are already filled out for you.
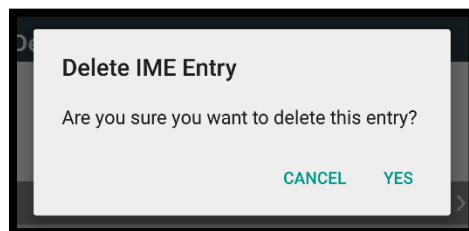

1. Delete IME Entry
   - When clicking this button, a warning will pop out that will confirm if you want to delete the entry.


   - After deleting the entry, text will appear confirming the deletion. You will be redirected to the list of IME entries.

2. IME Number
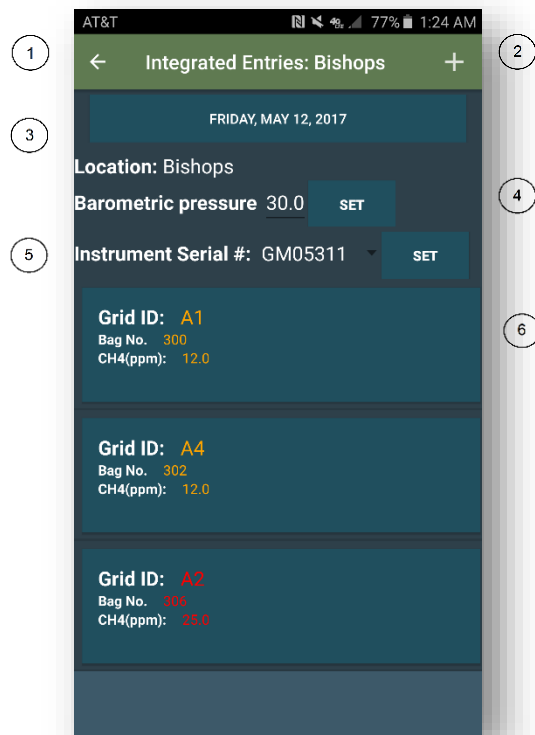   - The IME number exists when the CH_4 reading exceeds 500.

3. Setting the Grid ID

- You can select the Grid ID from the drop-down menu. The entries in the drop-down menu differ for each location.

④ Setting CH$_4$ Reading

- Allows you to set the methane reading in ppm for a grid.

⑤ Setting the Description

- Allows you to write any description you would like about the IME here.

⑥ Setting the Date

- Allows you to set the Date for the IME entry.

⑦ Setting the Time

- Allows you to set the time for the IME entry.

⑧ Submit Button

- When you are done filling out the IME entry, you can press the submit button to save the entry. After doing so, text will appear to confirm the addition. You will be redirected to the list of IME entries.

The IME entry has been added to the list.
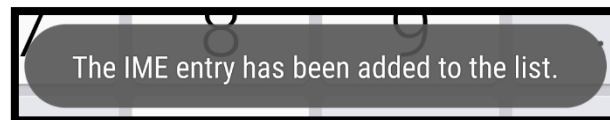
Tests: Integrated

Clicking on the Integrated icon will direct you a list of Integrated entries.

1. Back Button

   o Supposed to redirect you back to the Available Tests page.

2. Add an Integrated Entry

   o Directs you to the Integrated form page. You can enter Integrated information here.

3. Date Filter

   o Filters the Integrated list, depending on the date chosen.

4. Barometric Pressure

   o Allows you to set the barometric pressure.

5. Setting Equipment SN (Serial Number)

   o The Serial number chosen from equipment.

6. Edit Entry

   o Allows you to modify Integrated Information in that entry.

Adding an Integrated Entry

Adding an Integrated entry is as easy as clicking a button. The inspector field, location, and date fields are already filled out for you.
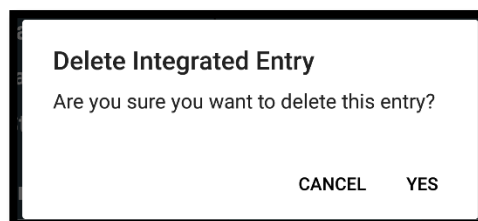

1. Delete the Integrated Entry

   o When clicking this button, a warning will pop out that will confirm if you want to delete the entry.

   o After deleting the entry, text will appear confirming the deletion. You will then be redirected to the list of Integrated entries.

2. Setting the Grid ID

   o You can select the Grid ID from the drop-down menu. The entries in the drop-down menu differ for each location.

3. Setting Equipment SN (Serial Number)

- This currently does not work and is still under construction.

④ Sample ID

- The sample ID automatically generated in the form of XXIS-###-YYMMDD where XX is the landfill code, IS is constant, ### is the grid ID, YY
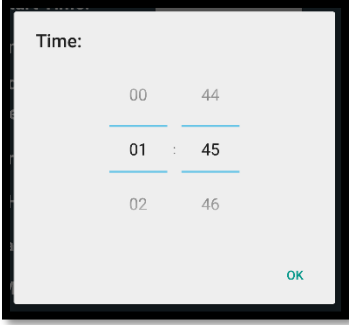
⑤ Setting Bag Number

- You can set the bag number, which is between 300-399. Currently the application supports any number, but as the application progresses, it will be fixed.

⑥ Setting your Start Time

- Set the start time of the Integrated Entry. By default, the time is set when you press the ＋ button on the Integrated Entry page.
- You can also manually change the time by clicking on it.
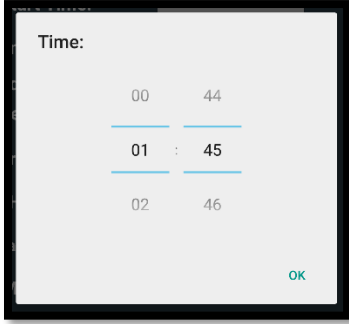

⑦ Setting your End Time

- Set the end time of the Integrated Entry. By default, the time is set 30 minutes after you press the ＋ button on the Integrated Entry page.
- You can also manually change the end time by clicking on it.

⑧ Setting CH_4 Reading

- You can set the methane reading in ppm for a grid. .

(9) Setting Volume

- o You can set the volume for the field.

(10) Submit Button

- o When you are done filling out the Integrated entry, you can press the submit button to save the entry. Further dialog will come later as the application progresses.

Tests: ISE

Clicking on the ISE icon will direct you a list of ISE entries.
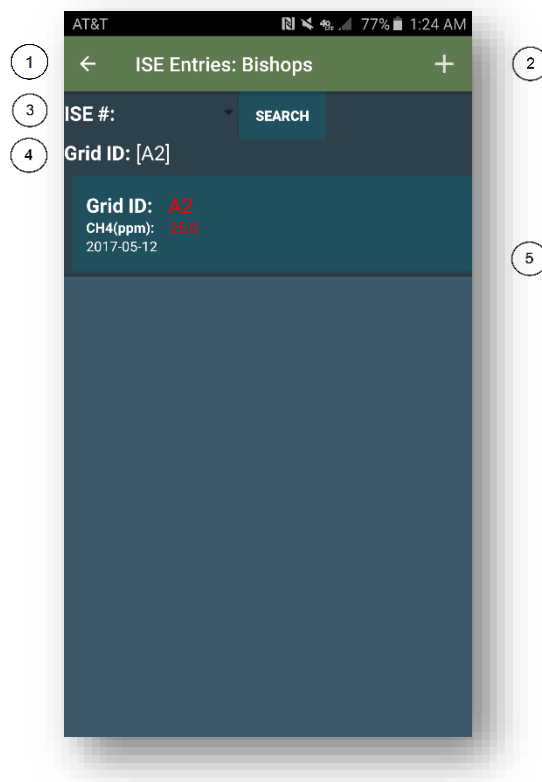
(1) Back Button

- o Supposed to redirect you back to the Available Tests page.

(2) Add an ISE Entry

- o Directs you to the ISE form page. You can enter ISE information there.

(3) ISE filter

- Allows you to filter the ISEs. Doing so will allow you to access the desired ISEs faster instead of scrolling down to locate it.

④ Grid ID

- Shows the current grids that have an ISE associated with it.

⑤ Edit Entry

- Allows you to edit the ISE entry.

Adding an ISE Entry

Adding an ISE entry is as easy as clicking the ☐ button. After clicking this button, you will be prompted with a message:

New ISE Entry

Would you like to add to current ISE or create a new one?

CANCEL   CREATE A NEW ISE   ADD TO CURRENT I

When choosing "Create A New ISE", you will be directed to this form.

① Delete ISE Entry

  o When clicking this button, a warning will pop out that will confirm if you want to delete the entry.

  o After deleting the entry, text will appear confirming the deletion. You will be redirected to the list of ISE entries.

② ISE Number

 o The ISE number exists when the CH_4 reading exceeds 25.

③ Setting the Grid ID

  o You can select the Grid ID from the drop-down menu. The entries in the drop-down menu differ for each location.

④ Setting CH$_4$ Reading

- o Allows you to set the methane reading in ppm for a grid.

⑤ Setting the Description

- o Allows you to write any description you would like about the ISE here.

⑥ Setting the Date

- o Allows you to set the Date for the ISE entry.

⑦ Setting the Time

- o Allows you to set the time for the ISE entry.

⑧ Submit Button

- o When you are done filling out the ISE entry, you can press the submit button to save the entry. After doing so, text will appear to confirm the addition. You will be redirected to the list of ISE entries.

Tests: Probe

Clicking on the Probe icon will direct you a list of Probe entries.
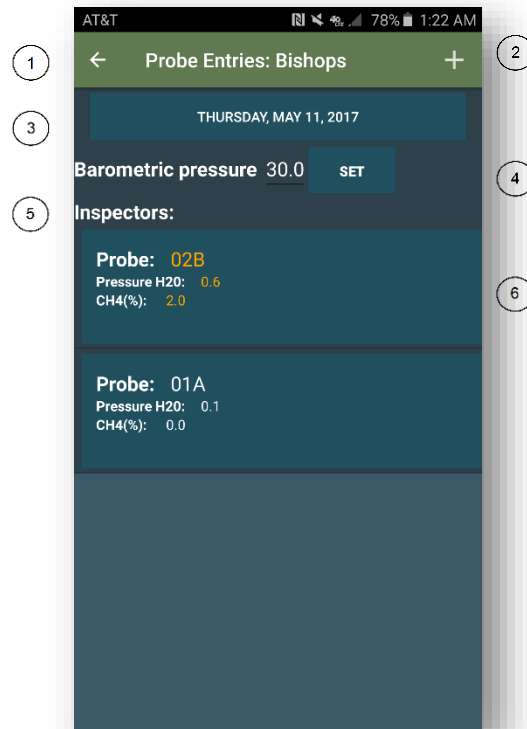
1. **Back Button**

    o Supposed to redirect you back to the Available Tests page.

2. **Add a Probe Entry**

    o Directs you to the Probe form page. You can enter Probe information here.

3. **Date Filter**

    o Filters the Probe list, depending on the date chosen.

4. **Barometric Pressure**

    o Allows you to set the barometric pressure.

5. **Inspectors**

    o Displays the inspectors that have assisted you for the day.

6. **Edit Entry**

    o Allows you to modify Probe information for that entry.

Adding a Probe Entry

Adding a Probe entry is as easy as clicking a button. The inspector field, location, and date fields are already filled out for you.

1. Delete the Probe Entry
    o When clicking this button, a warning will pop out that will confirm if you want to delete the entry.

   o After deleting the entry, text will appear confirming the deletion. You will then be redirected to the list of Probe entries.

2. Setting the Probe

- o You can select the Probe from the drop-down menu. The entries in the drop-down menu differ for each location.

(3) Setting H_2O Reading

- o You can set the H_2O reading in ppm for a probe.

(4) Setting CH_4 Reading

- o You can set the methane reading percentage in ppm for a probe.

(5) Remarks

- o Allows you to write any description you would like about the Probe here.

(6) Submit Button

- o When you are done filling out the Probe entry, you can press the submit button to save the entry. Further dialog will come later as the application progresses.
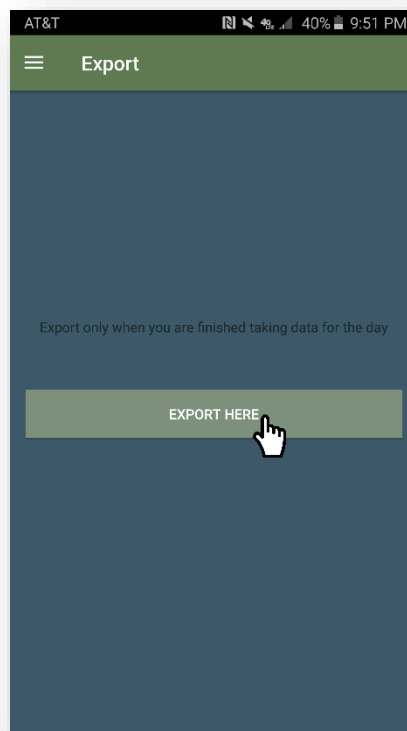
Export

You can access the Export screen by pressing the "Export" button on the menu.
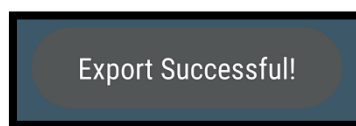

You will then be redirected to the Export screen.

The Export screen allows you to convert the data you have taken from the application into data that you can feed to the Web application.


You should only export at the end of the day, when you get back to the office. Clicking the **EXPORT HERE** button turns the data into a JSON file, which can be transferred to the web application. You can read more about this on the web application part of the manual.

Upon successful export, you will receive a message indicating that the export is successful,

otherwise, you will receive a message indicating unsuccessful export.
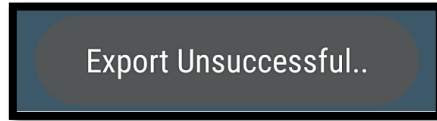
④ Sync

This will be implemented next year.

⑤ Settings

This will be implemented next year.

Logout

You can Logout by pressing the "Log Out" on the menu.

You will then be redirected to the Login Page.

Handling Data
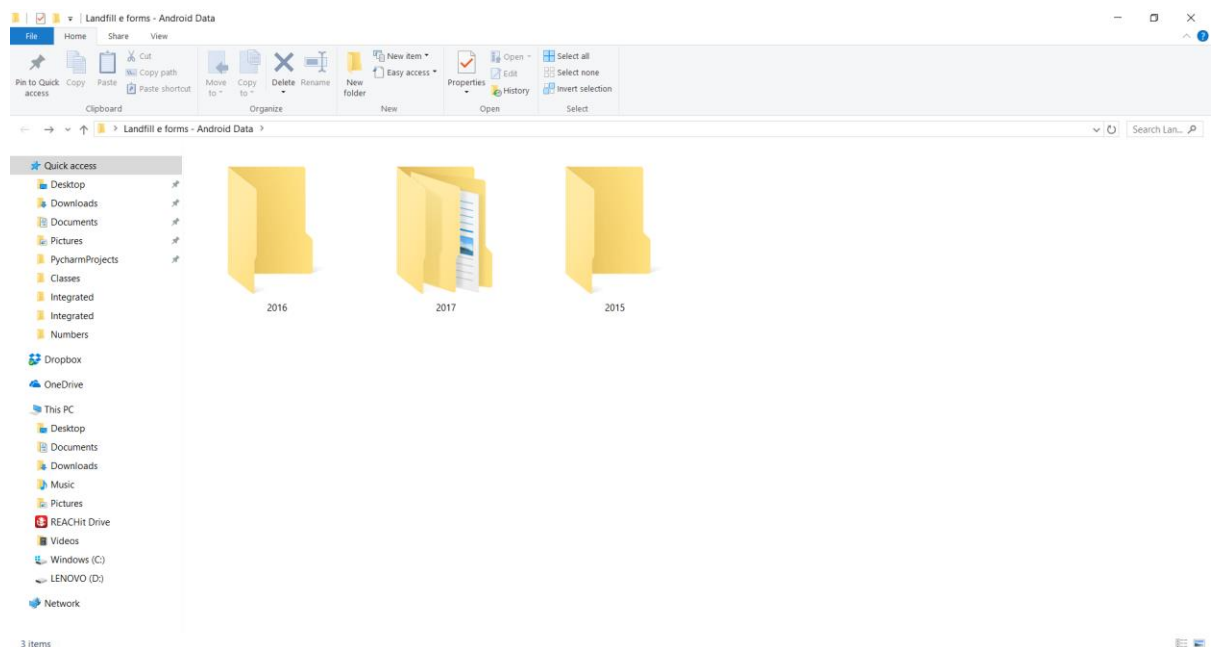
Handling Data

Handling Data from the Mobile Application to the Web Application

When transferring the JSON file generated by the Android application, it is best to keep the data on a folder. By doing this, the data will be more organized and you will be able to locate the data faster if you ever need to locate it.

On your desktop, create a new folder. Name it "Landfill e forms - Android Data". It should look something like this:
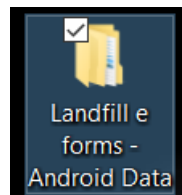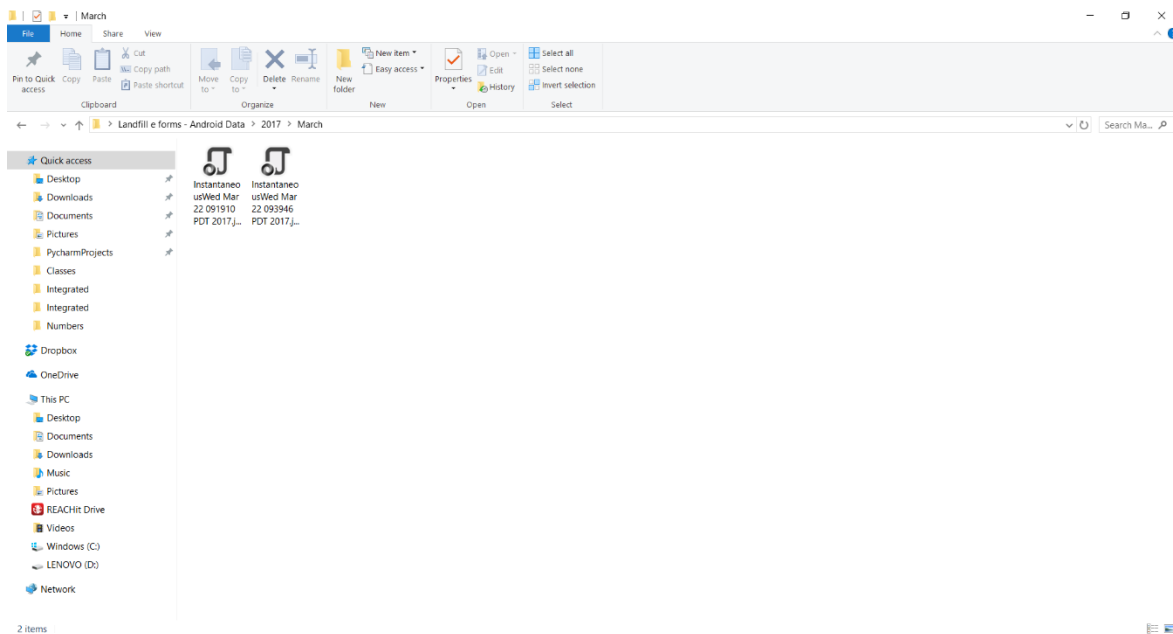

From there, create folders for years, and inside each year, create folders for each month.
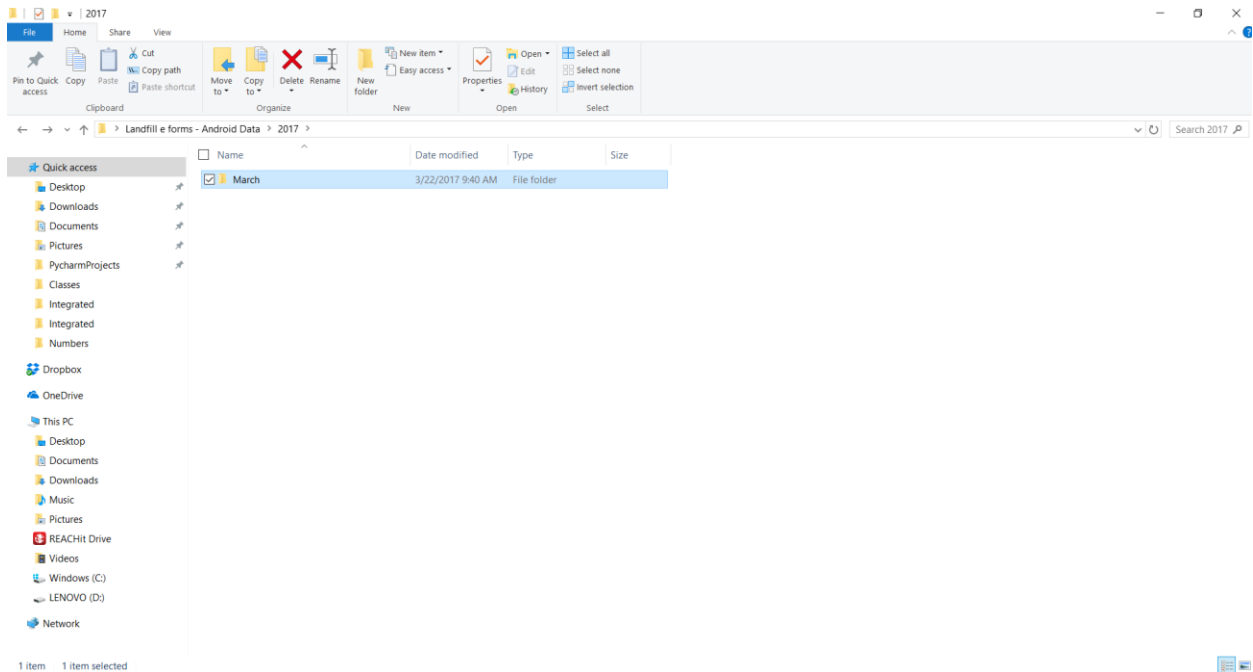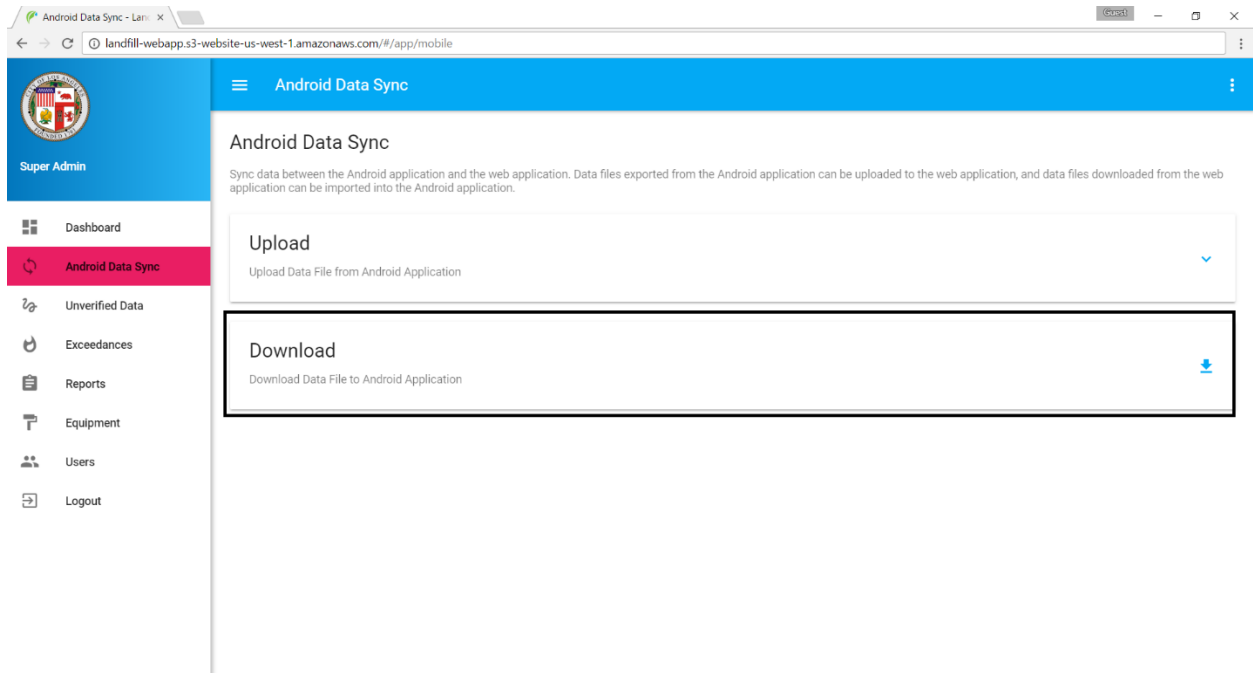
From there, you can store JSON files that are generated from the Android application.
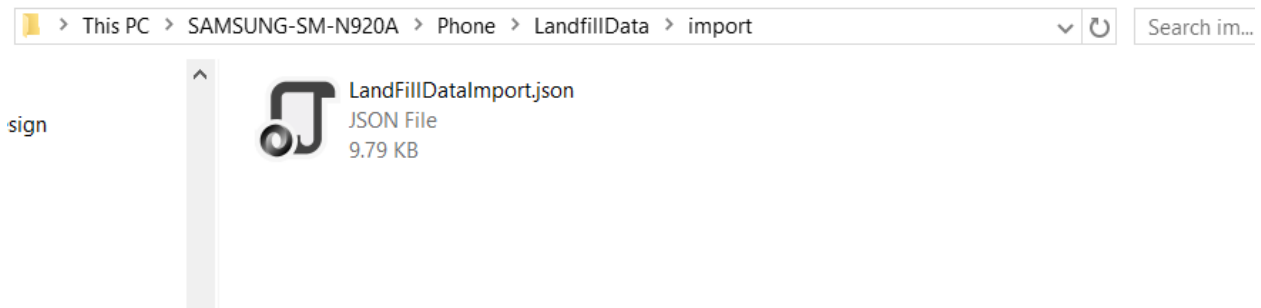
Handling Data from the Web Application to the Mobile Application

When you download the JSON file from the web application, you will need to store this file in a specific place on your phone.

Press Download, then locate the file. Drag the file into the phones directory:

The result should the pic picture shown above. If there already is a file, simply replace the old file with the new file that was downloaded from the web application.

Best practices for maintaining and cleaning data on your phone

After exporting files for a week or so, your phone may become cluttered with lots of JSON files. Therefore, it is important to regularly maintain where you store your data. We do this in order to not get confused when exporting files start piling up and you cannot recognize file from another.

- Make sure all these JSON files are stored on your computer, or on a secure server.
- After doing so, you can then delete the files in the mobile application. Make sure to only delete the files generated by the mobile application, not anything else (These should be JSON files stored in the LandfillData folder, not on the import folder).