

USER GUIDE

Precision-IQ

MANAGING FIELDS AND GUIDANCE PATTERNS



PTx
Trimble

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Legal Notices

Agriculture Business Area

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Fields and Guidance Representation in Precision-IQ

- [Fields and Guidance Elements in Precision-IQ](#)
- [Managing Fields on the Home Screen](#)
- [Field Manager Overview](#)
- [Run Screen Overview](#)

Fields and Guidance Elements in Precision-IQ

Precision-IQ manages a variety of complex tasks and configurations to efficiently manage a farm. The work conducted to accomplish each task is performed in *field*. Therefore, precise details about each field must be collected so that accurate task progress can be tracked. Information about a farm is accessed and displayed through Precision-IQ depending on task to be completed.

All fields, which exist in a variety of shapes and sizes, are defined by at least one *guidance pattern*. Managing guidance patterns is an essential function of Precision-IQ. Common field and guidance pattern terms recognized by Precision-IQ include:

Field: The area where a task or related work is performed. Such activity can only be applied to one field at a time. *Orchards* and *vineyards* are also considered as fields.

Farm: A farm is composed of at least *one* field. Multiple fields are often associated with a farm.

Client: The client is the primary owner of at least one farm. Clients can be associated with multiple farms.

Boundary: A boundary defines the outer edge of a field. A field *must* have a defined boundary before any task or work is performed using Precision-IQ.

Headland: A headland is a strip of land within the boundary of a field to allow space for the vehicle to turn around to continue the work within the field.

Guidance lines: These lines are created within Precision-IQ and displayed on a virtual map to show the path where a vehicle should be driven within the field. These guidance lines automatically adjust to accommodate for implement changes, depending on the task to be performed. Common guidance lines include AB lines, A+ lines, curves, pivots, etc.

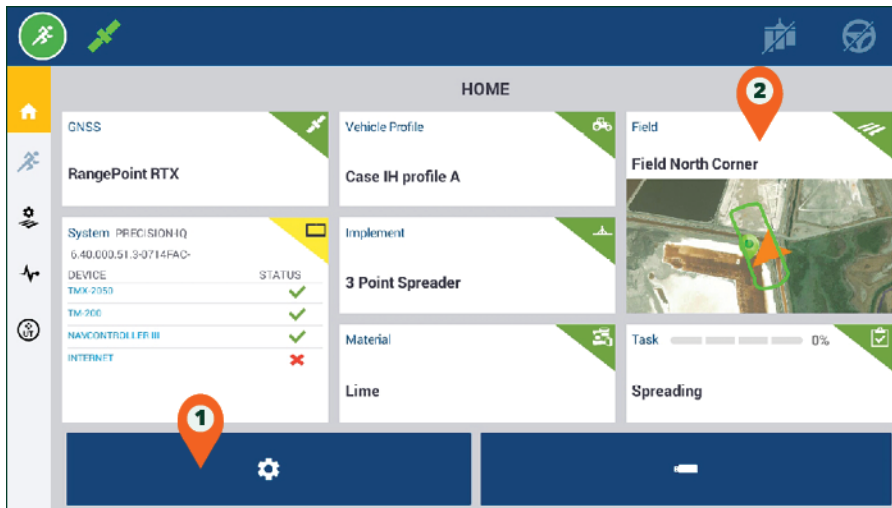
Three main screens in Precision-IQ are used to manage fields and guidance patterns:

- **Home screen.** The *Home* screen displays when Precision-IQ is first launched. It provides at-a-glance details of a vehicle, implement, material, task to be performed, field location, etc.
- **Field Manager.** The *Field Manager* screen contains the functionality to fine tune and adjust all guidance patterns for all fields.
- **Run screen.** The *Run* screen is arguably the most important feature of Precision-IQ. From here, all tasks and work is done, guidance patterns are selected, application of material is tracked, and much more.

Managing Fields on the Home Screen

The Precision-IQ *Home* screen provides the following functionality:

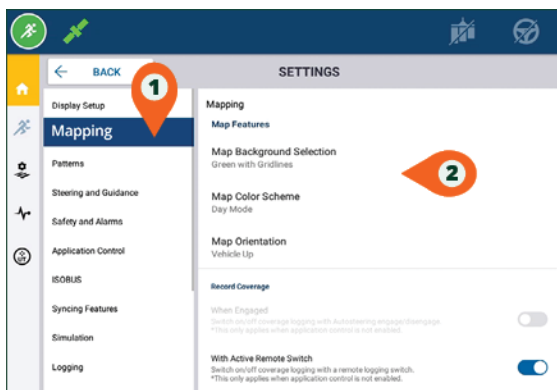
1. **Settings.** Tap the **Settings** button to set preferences for how Precision-IQ displays a field.
2. **Field tile.** Tap this tile to select a field to work in, create a new field, delete a field, and set a client/farm filter.



Field Settings

Tap the **Settings** button on the *Home* screen to set the preferences for how a field is presented on the *Run* screen.

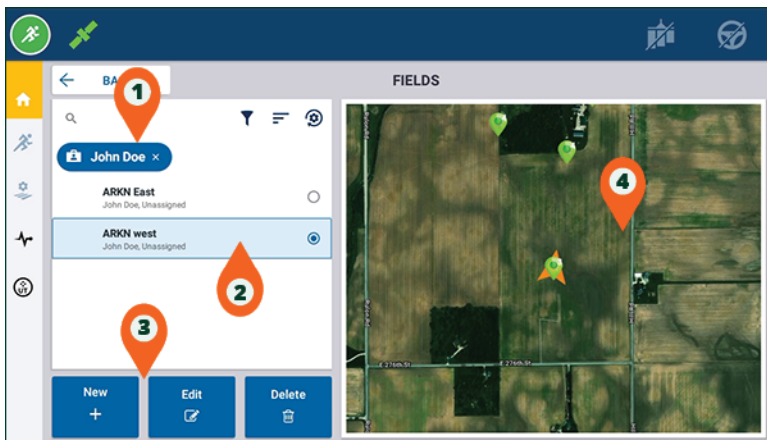
1. On the *Settings* screen, tap **Mapping**.
2. Under *Map Features*, set preferences for the map background, color scheme, and orientation:



Field Tile Functionality

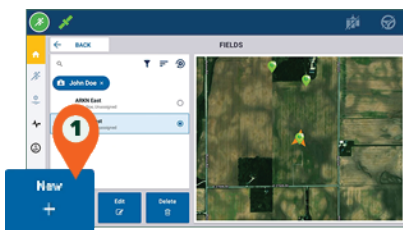
On the Precision-IQ *Home* screen, tap the **Fields** tile to display the *Fields* screen:

1. Search for available fields and create filters to sort by client, farm, or field names.
2. Select a field to be worked. Tap an available field from the list. The **Fields** tile on the *Home* screen will automatically update with the selected field.
3. Create, modify, or remove a field.
4. Satellite view of the selected field.



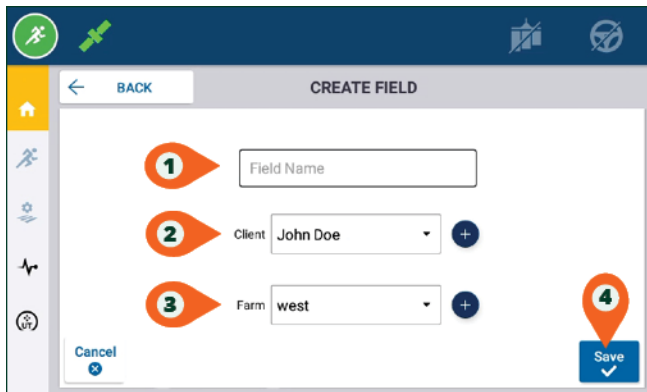
Add a Field

On the *Field* screen, tap the **New** button:



The *Create Field* field pop-up window appears.

1. Enter a unique **Field Name**.
2. Enter a **Client** name.
 - If the client already exists, then tap the **Client** drop-down to select it from the list.
 - If the client is new, then tap the **Plus** icon to enter a new client name.
3. Enter a **Farm** name.
 - If the farm already exists, then tap the **Farm** drop-down to select it from the list.
 - If the client is new, then tap the **Plus** icon to enter a new farm name.
4. Tap the **Save** button.



The new field is added to the list of fields and is selected.

NOTE – To maintain an accurate client, farm, field data structure, Precision-IQ enforces a client/farm-to-field association.

Select a Field

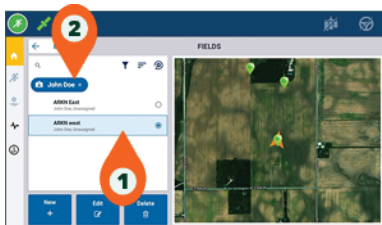
NOTE – A field *must* be selected before any work can be done within it.

On the *Fields* screen:

1. Select a field from the field list. The outlines on the map of the *Home* screen indicate fields you have created.

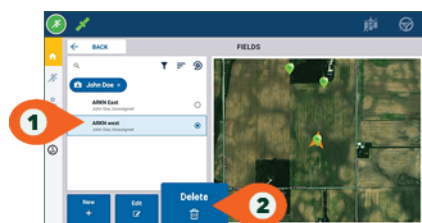
OR

2. Select a field from a field search:



Delete a Field

1. On the *Fields* screen, tap the field you want to delete to select it.
2. With the field selected, tap the **Delete** button.



3. On the *Delete Field* confirmation pop-up, tap **OK**.

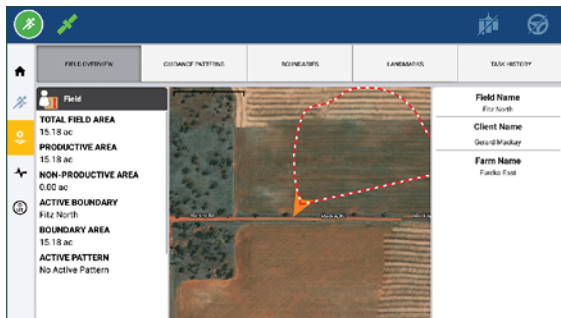
The *Field* screen updates with the field deleted. After the deletion, no field will be selected.

Field Manager Overview

On the activity bar of the Precision-IQ *Home* screen, tap the **Field Manager** icon:



The *Field Manager* screen appears:



Tap the buttons along the top for details about the selected field and to modify each element of the field:

- **Field Overview.** This screen provides details about the selected field including the farm name, client name, boundary areas, etc. The satellite image will show an outline of the field.
- **Guidance Patterns.** All guidance patterns available to the selected field can be enabled/disabled and modified from this screen including guidance patterns created on the *Run* screen.
- **Boundaries.** Use this screen to modify the recorded boundary of the selected field. For example, a boundary can be expanded without recording a new one.
- **Landmarks.** Create, customize, and apply special markers to your field to show specific points, lines, or area features. See [Landmarks \(Point/Line/Area\)](#) for more information.
- **Task History.** This screen shows all of the tasks that have been recorded for the selected field.

NOTE – Licensed features that apply to a field can be modified from the Field Manager. The buttons along the top of the screen will update to show the available licensed feature.

Run Screen Overview

When the resource tiles on the Precision-IQ *Home* screen are appropriately selected, tap the **Run** icon:

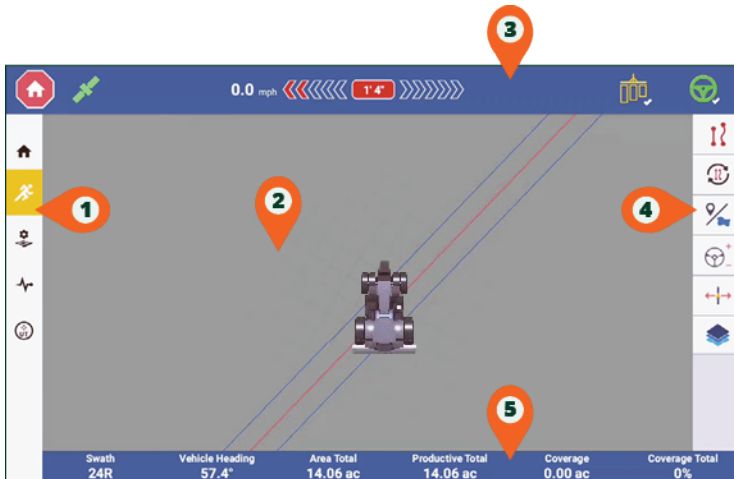


The *Run* screen appears.

1. **Activity bar.** These icons are available on all screens in Precision-IQ. Tap an icon on this bar to navigate to other functional areas.
2. **Virtual map.** This area shows the orientation of the vehicle and implement, field boundaries, landmark markers, guidance patterns, material application, etc.
3. **Status bar.** This region shows at-a-glance activity of the work being performed in the field. For example:
 - Satellite connectivity.
 - Virtual light bar (for guidance accuracy).
 - Application control.
 - End-of-row turn.
 - Auto guidance.
4. **Function buttons.** Tap these buttons to work with a variety of features and functions for performing tasks in the field. Each button opens a drawer where you can customize and enable each function.

NOTE – Some features and functions require a license. Where appropriate, the function buttons will update to show any licensed feature or function.

5. **Information details.** This area provides an extensive data set depending on the function or task being performed.



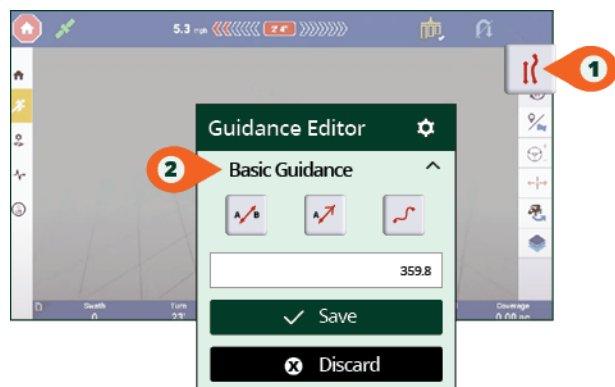
Basic Guidance Patterns

- [Basic Guidance Overview](#)
- [AB Line](#)
- [A+ Line](#)
- [Curves](#)
- [Adjusting a Guidance Pattern](#)
- [Pattern Select](#)

Basic Guidance Overview

Many fields can include a variety of guidance patterns including patterns available with an installed license. This section describes some of the basic guidance patterns that will give you a baseline understanding of how guidance patterns are used in a field.

1. On the *Run* screen, tap the **Guidance Pattern** button.
2. In the *Guidance Editor* window, select **Basic Guidance**:



AB Line

With *AB lines*, you define the start and end points. Precision-IQ records a straight line from point A to point B. Parallel guidance lines (or swaths) will be projected multiple times on either side of the AB line. Under *Basic Guidance*, tap the **AB Line** button.



NOTE – Precision-IQ uses the implement width to project swaths for the master line. Active lines project swaths in either direction based in the width used to create the line.

To create an AB line:

1. With the vehicle in the position where you want to begin recording, tap **Set A**:
2. The Precision-IQ virtual map updates to show a straight dashed line between the A point and the vehicle's current location.
3. To complete the line and close the controls, tap **Set B**:
4. To save the line, tap **Save**, or tap **Discard** to cancel the AB line creation.



The distance between swath lines is based on the width of the implement that was used when creating the line.

A+ Line

With an **A+ line**, you define a point on the line and the direction the line is heading. Precision-IQ sets a straight directional line from point A toward the selected direction (compass direction, path of travel, or heading value). Parallel guidance lines will be projected multiple times on either side of the A+ line.



To create an A+ line:

1. In the *Basic Guidance* drawer, tap the **A+** button.
2. Enter a degree value in the field to set the direction:

Where:

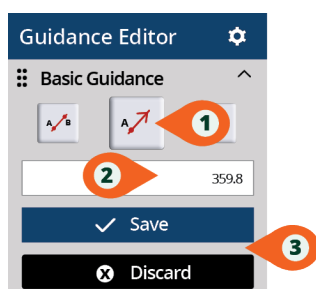
North = 0 (*default setting*)

East = 90

South = 180

West = 270

3. Tap **Save** to accept the line and direction and close the controls. Or tap **Discard** to cancel.



Precision-IQ saves the A+ line. The distance between swath lines is based on the width of the implement that was used to create the line.

Curves

You can record a line with curved and/or straight segments. Matching guidance lines will be projected multiple times on either side of the curved line.



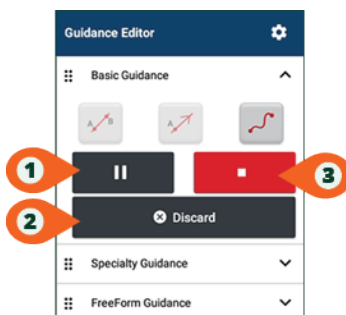
To create a curved guidance pattern:

1. On the *Guidance Editor* drawer, tap the **Curve** button.
2. With the vehicle in the position where you want to begin recording the curve, tap the **Record** button to start the recording.



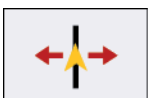
As you are driving, Precision-IQ marks your starting point on the map, at the point where you tapped the record button. It shows the recorded path with a dashed line between the starting point and the vehicle's current location.

1. To create a straight line as part of your curved line, tap the **Pause** button. (Tap **Resume** to resume recording the curve.)
2. To cancel the curve line creation, tap **Discard**.
3. When you are at the end of the curve line, tap the **Stop** button.



Adjusting a Guidance Pattern

To adjust guidance while performing field activities, at the Run screen, tap the **Guidance Pattern Adjust** button:



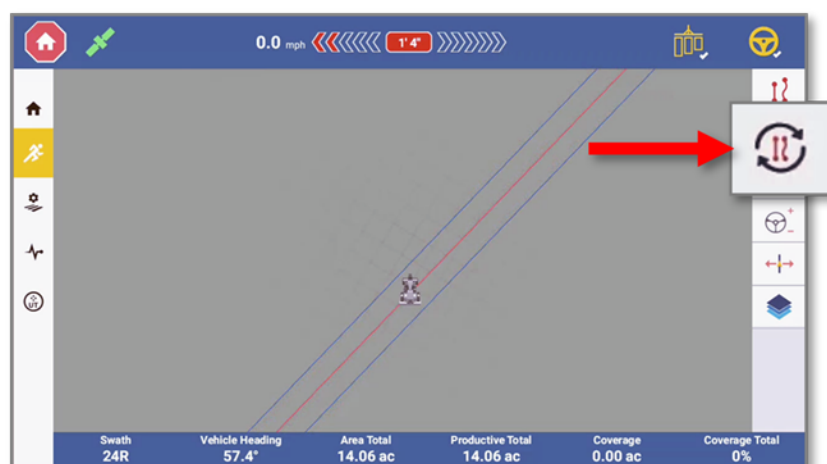
The guidance adjustments buttons display.

NOTE – These adjustments are removed if you enter a new task. Your system may also be set up to remove these adjustments with a power cycle.

Buttons	Use to...
Nudge	Temporarily move the vehicle left or right depending on the direction you chose.
Remark	Temporarily move the pattern to the vehicle's current location.
Implement Draft Correction	Move the implement back on the guidance line if the implement is physically drifting offline in the field. The value between the arrow buttons indicates the amount of distance for the correction.

Pattern Select

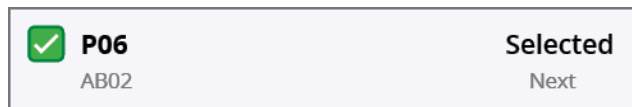
For fields and farms that use a variety of guidance lines and boundaries, Precision-IQ includes the ability to select them directly from the *Run* screen. Tap the **Pattern Selector** button to toggle between all AB guidance patterns for a selected field, or you can long hold the button for a list of all AB guidance lines and created boundaries for the selected field:



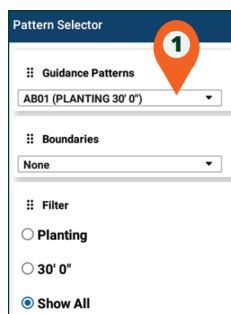
For farms that have multiple AB guidance lines, briefly tap the **Pattern Selector** button to select and activate the first line in the AB line manager. Tap **Pattern Selector** again to toggle to the next guidance line in the library:



As you toggle through the available guidance lines, a pop-up notification will appear to show the current selected (activated) pattern, and the pattern that will be activated with the next tap:



Long hold the **Pattern Select** button for a pop-up list of all available guidance lines and boundaries, as well as set AB guidance line filter settings:



NOTES –

You can filter AB guidance lines displayed and activated by the short tap function of the Pattern Selector based on: current implement width, current operation type, or turn the filter off by selecting Show All for a complete list of all guidance lines regardless of implement width or assign operation type (operation types can be changed in the Field Manager).

Pattern Selection feature is disabled when: actively engaged on a AB line set, or when using Line Sets associated with “Guide to Line” functionality.

FreeForm Guidance Patterns

- FreeForm Guidance
- FreeForm Guidance: AB Line
- FreeForm Guidance: Curve
- FreeForm Guidance: Auto U-Turn Detection
- FreeForm Guidance: Swath Swapper

FreeForm Guidance

Irregular shaped fields require the ability to adapt guidance behavior to fit the field shape, rather than forcing an inefficient use of straight/curved guidance patterns. *FreeForm Guidance* records your current swath and generates one guidance swath to the right and left.

NOTE – FreeForm Guidance lines are stored with the task and thus can only be used with your current task.

1. On the *Run* screen, tap the **Guidance Editor** button.
2. In the Guidance Editor drawer, select **FreeForm Guidance**.
3. To record a FreeForm Guidance pattern, tap **Enable**.



FreeForm Guidance: AB Line

To set the A and B points:

1. Tap the **AB Line** button in the *FreeForm Guidance* section of the Guidance Editor drawer.
2. Tap the **Set A** button to set point A.
3. Drive a short distance in the desired heading.
4. Tap the **Set B** button to set point B. (Tap the **Set B** button again to update point B.)
5. To save the line, tap **Save**, or tap **Discard** to cancel the AB line creation.



NOTES –

- Engage Guidance on the straight AB line.
- FreeForm AB Lines will be projected as the vehicle travels away from the original AB line.
- FreeForm AB lines act much like Basic Guidance lines.

FreeForm Guidance: Curve

To create a FreeForm Curve pattern:

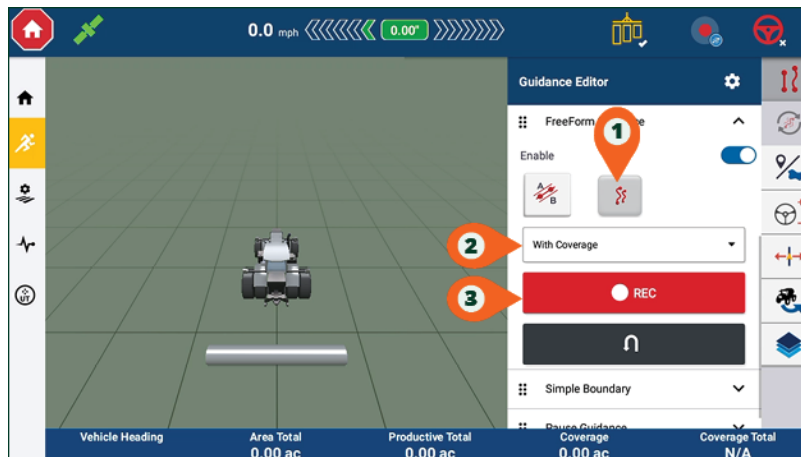
1. Tap the **Curve** button in the *FreeForm Guidance* section of the Guidance Editor drawer.
2. Select a coverage type:

Manual

While Engaged

With Coverage

3. Tap the **Record** button depending on your coverage type.



FreeForm Curve types include:

Manual

While Engaged

With Coverage

Manual

1. Tap **Record** to start a pass.
2. Tap **Stop** to finish the pass.
3. Repeat on subsequent passes.

While Engaged

Recording happens automatically after the first pass while vehicle steering is engaged.

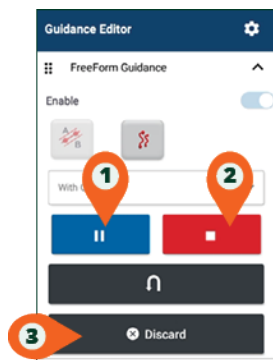
1. Tap **Record** to start recording first pass.
2. Drive the first pass and tap **Stop** when completed.

With Coverage

- Lines record automatically with the coverage application.
- Engage on the next line left or right of the recorded pass.
- Subsequent lines will be generated from the previously recorded pass, NOT the first guidance line.

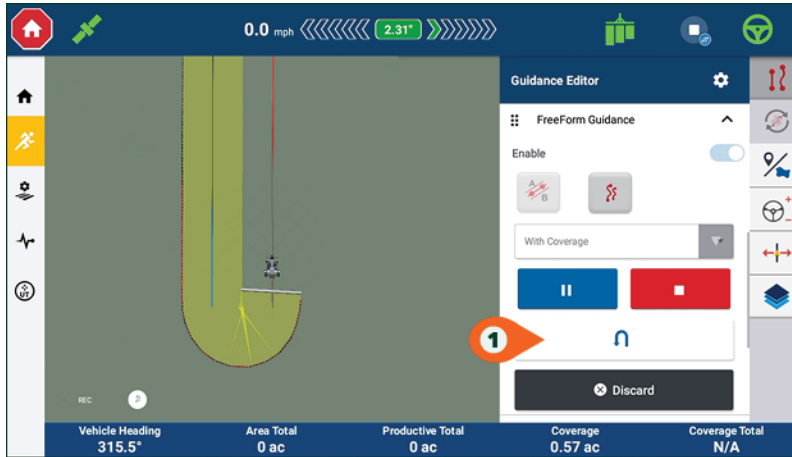
To complete the FreeForm Curve pattern:

1. To create a straight line as part of your curved line, tap the **Pause** button. (Tap **Resume** to resume recording the curve.)
2. When you are at the end of the curve line, tap the **Stop** button.
3. To cancel the curve line creation, tap **Discard**.



FreeForm Guidance: Auto U-Turn Detection

Guidance lines will be ended when Precision-IQ detects a U-Turn. You then can engage on the next swath.



FreeForm Guidance: Swath Swapper

Tap the **Swath Swapper** button to switch between recorded **Freeform AB Lines** and **Freeform Curves**:



Pause Guidance

- [Pause Guidance](#)

Pause Guidance

Once a guidance line has been created within a field, the operator will be able to use the Pause Guidance feature for the following:

- A distance to be measured from the Pause point, a dynamic measurement will be actively shown as the vehicle travels away from that pause point.
- When traveling large distances from an active swath, the guidance lines and coverage array can be distorted and misrepresented. Using this feature will improve the projected guidance lines and coverage when returning to the paused position.
- A marked Pause location is retained over a power cycle allowing the user to continue an existing task over a power cycle.

NOTE – There are no prerequisites for this feature.

As a best practice, bring the vehicle to a complete stop and disengage application control.

To pause guidance:

1. On the *Run* screen, tap the **Guidance Pattern** button.
2. In the *Guidance Editor* window, select **Pause Guidance**.
3. Tap the **Pause** button when you are ready to define a pause location.



To resume:

1. The virtual map of the *Run* screen will update to show that a *pause point* has been set.
2. As you drive away from the pause point, the *Distance To Pause Point* will update to show how far the vehicle is from where the pause point was set:

The system will now freeze the guidance active swath to the last swath highlighted, and you may engage on it but nothing to the right or left of this line; to continue coverage and guidance, the pause button must be canceled in order to continue work.

3. As you approach the pause point, the Distance to Pause Point field will update to show the distance remaining. Once you reach the pause point, bring the vehicle to a complete stop and tap the **Resume**

button to end the pause. Now, tap the **application control** icon to continue the work where you left off.



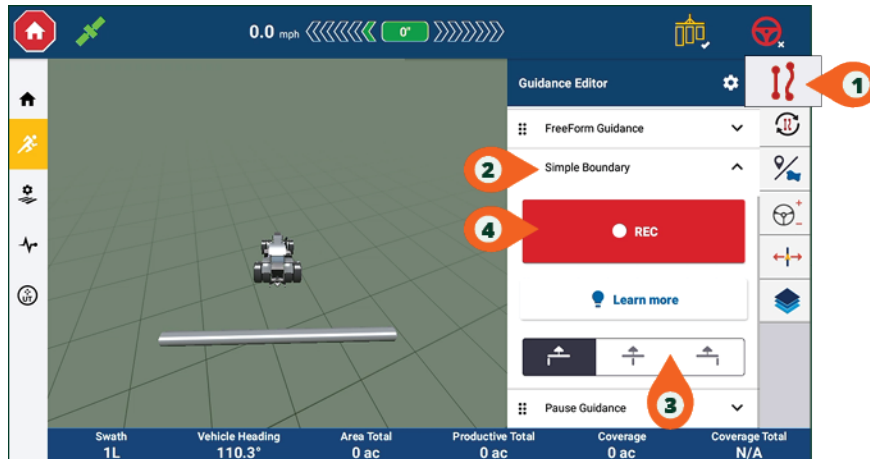
Boundary Recording

- [Simple Boundary Recording from the Run Screen](#)
- [Boundary Editing Using Field Manager](#)

As a best practice, a *boundary* should be created first even though any basic or FreeForm guidance pattern can be used in a field without a defined boundary. However, a boundary **must** be recorded before creating a *headlands* guidance pattern.

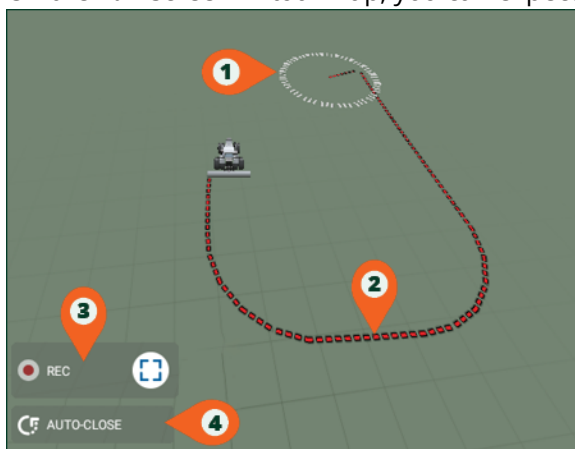
Simple Boundary Recording from the Run Screen

1. On the Precision-IQ *Run* screen, tap the **Guidance Editor** button.
2. In the *Guidance Editor* drawer, select **Simple Boundary**.
3. Set an offset of the simple boundary line based on the implement. Choose between **Left**, **Center**, or **Right**.
4. Tap the **Record** button to start a recording of a simple boundary. A line will be drawn on screen as you drive around the boundary. Tap **Stop** to end the recording.



TIP – As a best practice, create and/or engage on a basic guidance pattern while recording boundaries. By doing so, a more accurate boundary or infill pattern is created if headlands are used.

On the *Run* screen virtual map, you can expect to see these elements as you record your simple boundary:



Item	Virtual Map Element	Description
1	Auto-Close Area	When enabled, a circle is added at the start of the simple boundary recording. As soon as the implement enters the circle, the line is automatically closed.
2	Simple Boundary Line	As you drive the vehicle, the map will update to show the simple boundary line. The line appears behind the vehicle based on the offset button you selected. In this example, the simple boundary is being recorded with a left offset.
3	Recording Active	This element appears as you record the simple boundary. When paused or stopped, this element no longer appears.
4	Auto-Close Enabled	Like the icon in the Simple Boundary drawer, this element shows that the Auto-Close function is enabled.  NOTE – Auto-Close is enabled in the <i>Guidance Editor</i> settings.

Simple Boundary Icons and Buttons

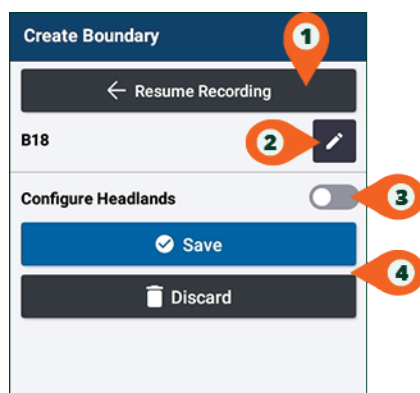
Icon/Button	Description
	When shown, Auto-Close is enabled. If this icon does not appear, then Auto-Close is not enabled.
	Record. Begin a simple boundary recording.
	Set Offset. Set the offset of the simple boundary line based on the implement. Choose between Left , Center , or Right . These buttons are active before you start the recording.
	Pause/Resume. Tap this button to suspend and resume recording of the simple boundary line. The <i>Set Offset</i> buttons become inactive while paused.
	Stop. Tap this button to stop the recording

Save Simple Boundary

NOTE – Auto-Close should be disabled or recording should stop before entering the Auto-Close circle if you wish to map the actual boundary instead of auto-close between two points.

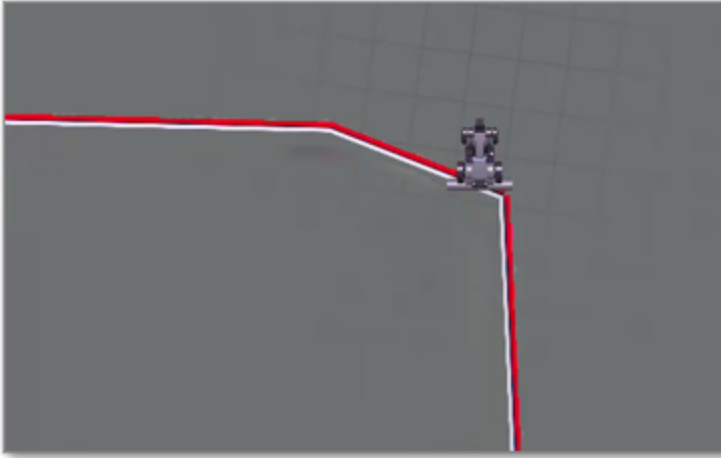
Tap the **Stop** button to stop recording the simple boundary. The *Create Boundary* drawer opens where you can:

1. Tap **Resume Recording** to continue recording of your boundary.
2. Tap the **Edit** icon to change the name of your boundary.
3. Tap the **Create Headlands** option to create a headland based on the boundary.
4. Tap **Save** to save the boundary or **Discard** to cancel.



NOTE – Once saved, the boundary is available as a guidance pattern in Field Manager.

The map updates with the completed and active boundary:



Boundary Editing Using Field Manager

On the activity bar of the Precision-IQ *Home* screen, tap the **Field Manager** icon:

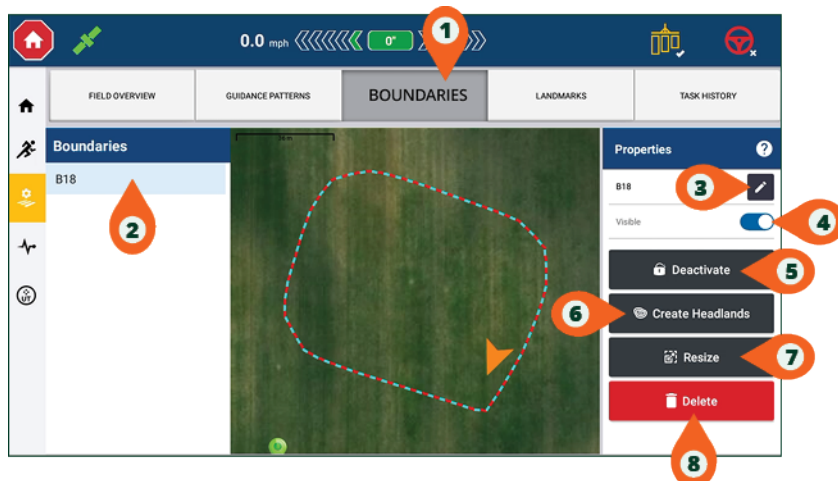


1. On the *Field Manager* screen, tap the **Boundaries** tab.
2. **Select Boundary.** On the left side of the screen, tap a boundary item to select it. Once selected, you can modify the boundary details.
3. **Edit.** Tap this button to edit the name of the boundary.
4. **Visible.** Toggle to make the boundary visible on the virtual map.
5. **Create Headlands.** Tap to create a headland.
6. **Activate Boundary.** Tap **Activate** to activate the boundary. An active boundary shows on the map with a red line.
7. **Resize.** Tap to change the size of the boundary. The map will update to show the boundary with a black line.
8. **Delete.** Tap this button to delete the selected boundary.

CAUTION -

Deleting a boundary **cannot** be undone.

Boundaries cannot be deleted while Headlands are associated with it. Headland guidance patterns should be deleted then the boundary can be modified.



Specialty Guidance

- [Headlands Overview](#)
- [Generate Headlands From a Simple Boundary](#)
- [Apply Headlands to an Existing Boundary Using Field Manager](#)
- [Infill Guidance](#)
- [Infill Guidance Using Field Manager](#)
- [Shifting an Infill Pattern](#)
- [Pivots](#)
- [Pivot Remark](#)
- [Pivot Shift](#)
- [Pivot Resize](#)

Headlands Overview

A *headland* is a strip of land within the boundary of your field to allow space for the vehicle to turn around to continue the work within the field.

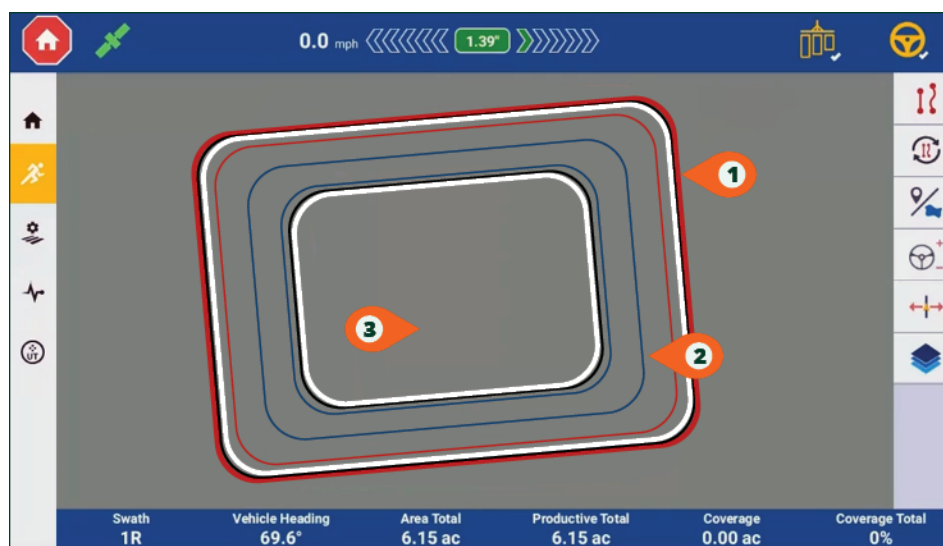
Headlands are created from *boundaries* and can be generated as the boundary is recorded or applied to an existing boundary.

TIP – As a best practice, create a guidance pattern **while** recording a boundary. In-field user efficiency is improved by having accurate guidance lines that correlate with boundaries.

Headland Elements

Typically, Precision-IQ recognizes three basic elements of the headland guidance:

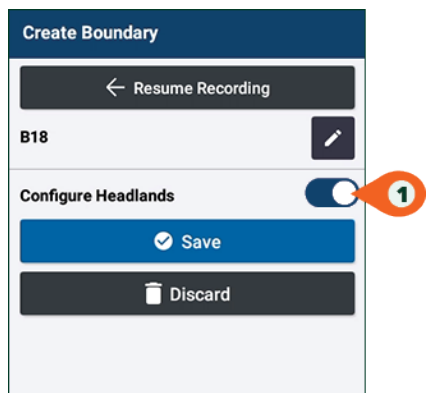
1. **Simple boundary:** defines the outer edge of the field to be worked.
2. **Headland:** the area set aside for the vehicle to turn around to begin/end a swath. This area is necessary to be defined - especially when applying product to the field. Precision-IQ will automatically suspend application while the vehicle is in the headland. Precision-IQ will automatically suspend application while the vehicle is in the headland, if the inner boundary is active.
3. **Infill area:** By activating the infill pattern and inner boundary, the operator can efficiently work the inner portion of the field first and finish the outer headlands later, which eliminates the need to drive on a worked area.



Generate Headlands From a Simple Boundary

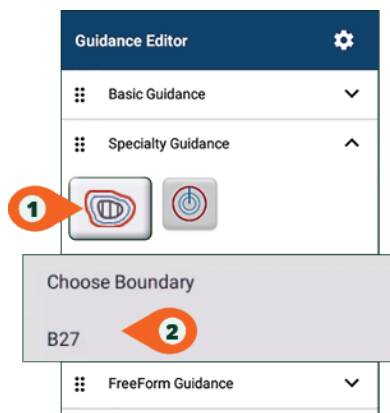
To generate a headland while recording a simple boundary:

1. Enable the **Configuration Headlands** option before saving the simple boundary.



To generate a headland from an existing simple boundary:

1. In the *Guidance Editor* drawer, tap the **Headlands** button.
2. In the *Choose Boundary* window, select the boundary to generate the headlands from.



To complete the headland generation, provide the details that define the headland:

1. **Circuits:** default is **2**.
2. **Swath Width:** dependent upon the width of the selected implement.
3. **Turn Radius:** also dependent upon the width of the selected implement.

To allow the vehicle to make sharper turns in the headlands, the operator should lower the *Turn Radius* value while creating headlands.

NOTE – Even though *Turn Smoothing* and *Turn Radius* can be adjusted from the **Settings** menu, those settings *do not apply* to headland creation.

4. **Infill Selection:** Choose which guidance pattern to assign as Infill from available field guidance patterns.

5. Tap **Create** to save the headland or **Discard** to cancel headland generation.

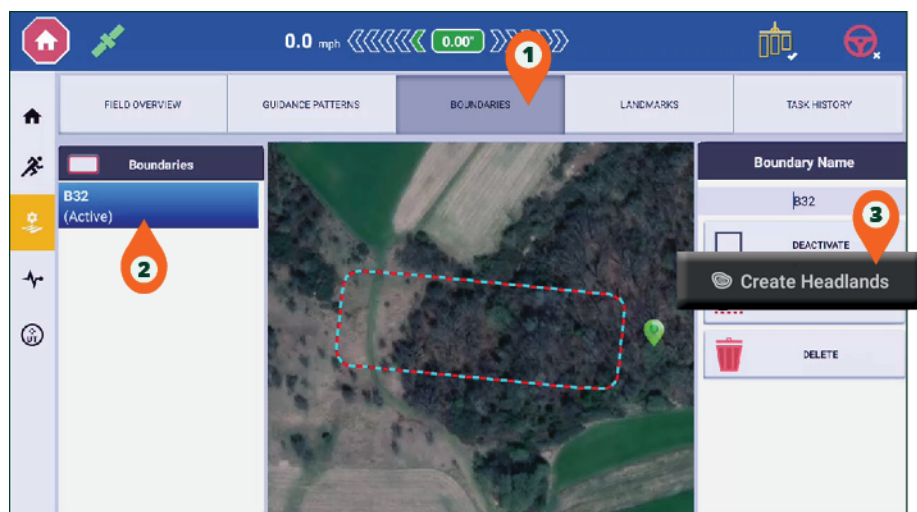
The 'Generate Headlands' dialog box contains the following elements with numbered callouts:

- 1**: Circuits input field, showing the value '2'.
- 2**: Swath Width input field, showing the value '25ft'.
- 3**: Turn Radius input field, showing the value '32.81ft'.
- 4**: Infill Selection dropdown menu, currently showing 'A02'.
- 5**: The '+ Create' button at the bottom of the dialog.

Below the '+ Create' button is a 'Discard' button with a trash icon.

Apply Headlands to an Existing Boundary Using Field Manager

1. In Field Manager, tap the **Boundaries** tab.
2. Tap the boundary you would like to add headlands to.
3. Tap **Create Headlands**.



4. Enter the Headlands values.

5. Tap **Apply** to add the headlands to the boundary.

Create Headlands

HL02

Circuits: 2

Swath Width: 25ft

Turn Radius: 32.81ft

Outer Boundary Buffer: 0ft

Inner Boundary Buffer: 0ft

Cancel Apply

Infill Guidance

As part of the headland creation, a basic guidance pattern (AB, A+, or Curve) can be used as *infill guidance*. As a best practice, create the infill guidance line **at the same time** as the simple boundary. (You can create one later, but it might not be perfectly straight or parallel with those outer zone boundary lines.)

1. On the Generate Headlands window, tap the drop-down for **Infill Selection** and choose a guidance pattern to assign as *Infill* from available field guidance patterns.
2. Tap **Create** to save the headland or **Discard** to cancel headland generation.

Generate Headlands

Circuits: 2

Swath Width: 25ft

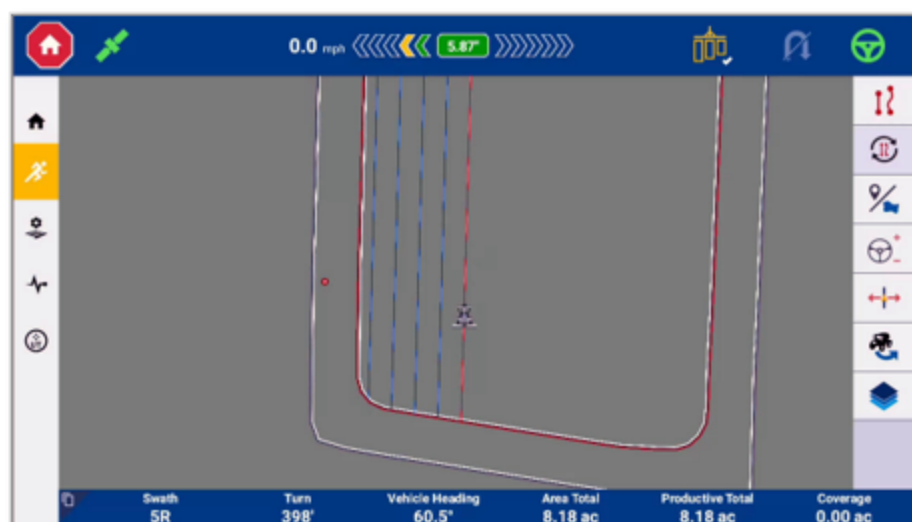
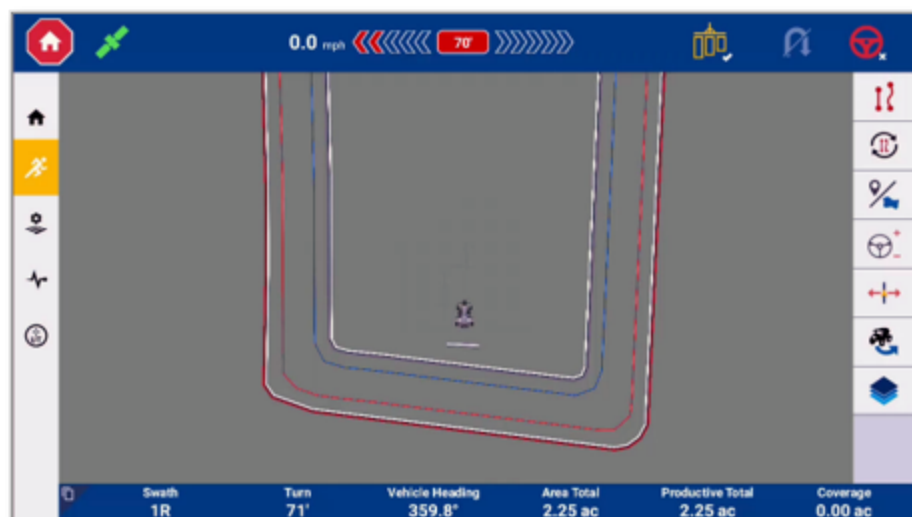
Turn Radius: 32.81ft

Infill Selection: A02

+ Create

Discard

The headland circuits, inner boundary, and infill patterns are generated and shown on the virtual map. Tap **Swath Swapper** to swap between headlands guidance pattern and Infill Guidance pattern.



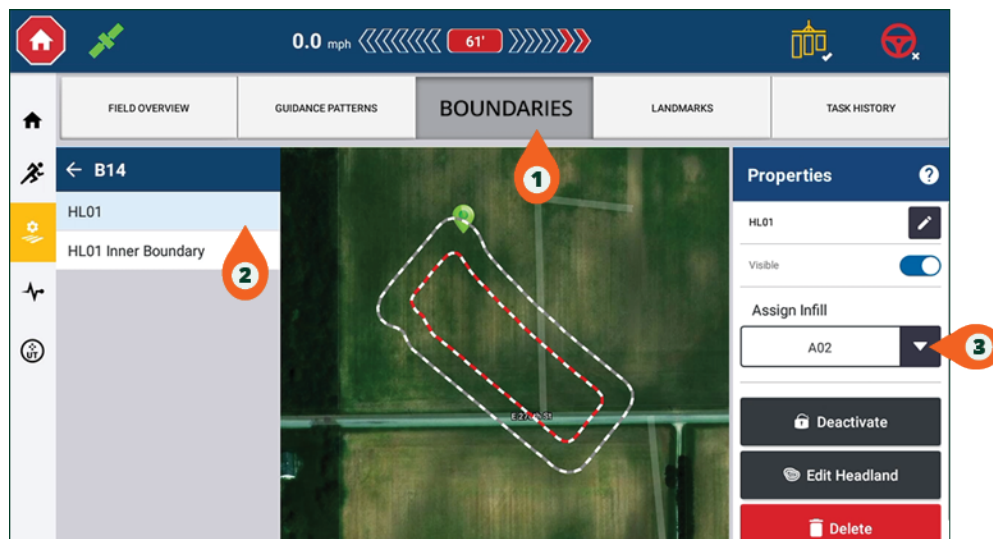
A guidance pattern must be established before an Infill may be assigned. Refer to [Basic Guidance Overview](#) to establish guidance pattern creation.

NOTE – If a guidance pattern was created while the boundary was being recorded, it is recommended to use that pattern as the Infill pattern. If one was not created while recording a boundary, then create an AB, A+, or Curve guidance pattern before proceeding.

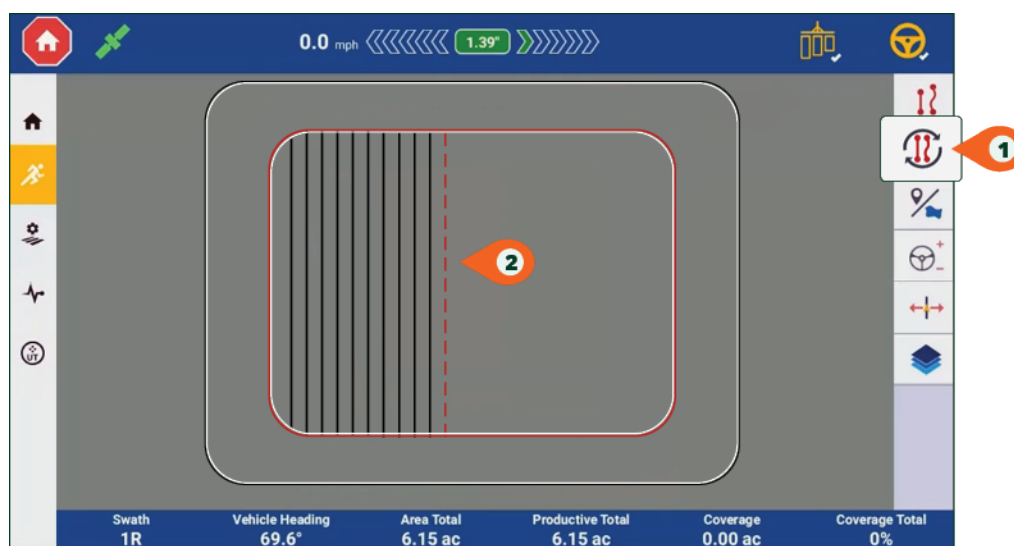
Infill Guidance Using Field Manager

1. On the *Field Manager* screen, tap **Boundaries**.
2. On the *Boundaries* screen, tap a headland to select it.

- Under **Assign Infill**, tap the drop-down to select a guidance line you would like to use as infill.

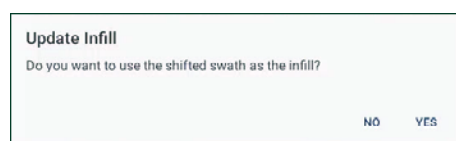
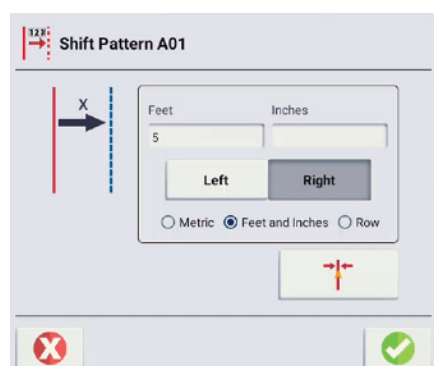
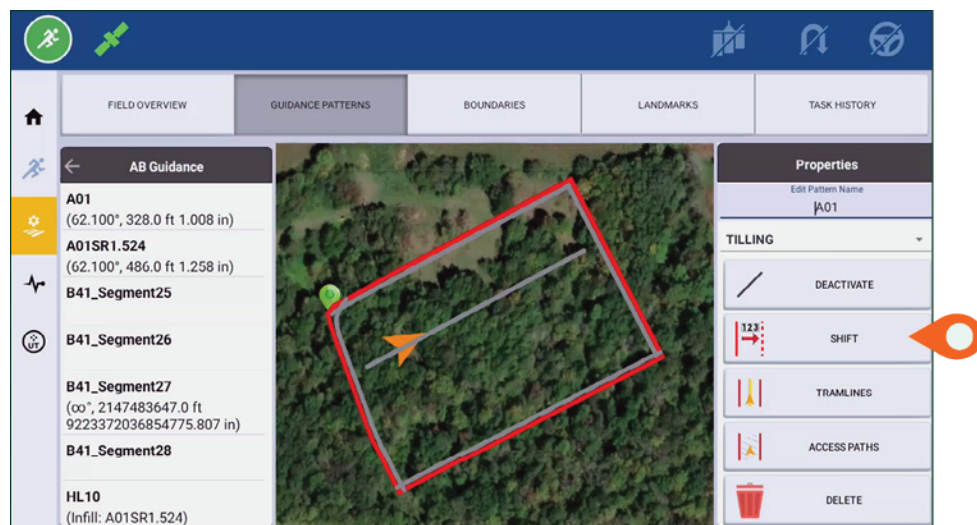


- Return to the *Run* screen and tap the **Swath Swapper** button.
- The infill pattern is assigned and the map updates to show the infill guidance pattern in alignment with the outer boundary.



Shifting an Infill Pattern

Precision-IQ allows an assigned infill pattern to be shifted and asks the operator if the newly created shifted line should be used as infill.



Pivots

Use the *Pivot* guidance pattern to record the exterior curve of a circular field and repeat the pattern. Precision-IQ uses the implement width to generate concentric circles. It also creates a pivot field boundary based on the specified distance to the pivot field edge.

To create a pivot guidance pattern:

1. With the vehicle positioned where you want to be recording the pivot pattern, tap **Specialty Guidance** in the *Guidance Editor* drawer.
2. Tap the **Pivot** button.
3. Tap **Set A**.

Precision-IQ marks your starting point on the map, at the vehicle's location when you tapped the record button. It shows the recorded path with a dashed line.

4. Drive at least 50 feet on an outer tower rut.

5. Tap the **Set B**.

The *Distance to Edge* window appears.

6. Enter the distance to the pivot field edge.
7. Tap **Apply** to save the distance-to-edge value, or tap **Cancel** to discard the changes.
8. Tap **Save** to save the pivot, or tap **Discard** to cancel the pivot.



When finished, Precision-IQ:

- Saves the pivot pattern with a unique name (for example, *P01*).
- Generates a pivot boundary based on the recorded path and the width of the implement. The pivot boundary is saved with a unique name related to the headland (for example, *P01 Boundary*).
- Makes the pivot boundary active.

Tap the **Guidance Patterns** button to dismiss the selection of guidance pattern buttons.

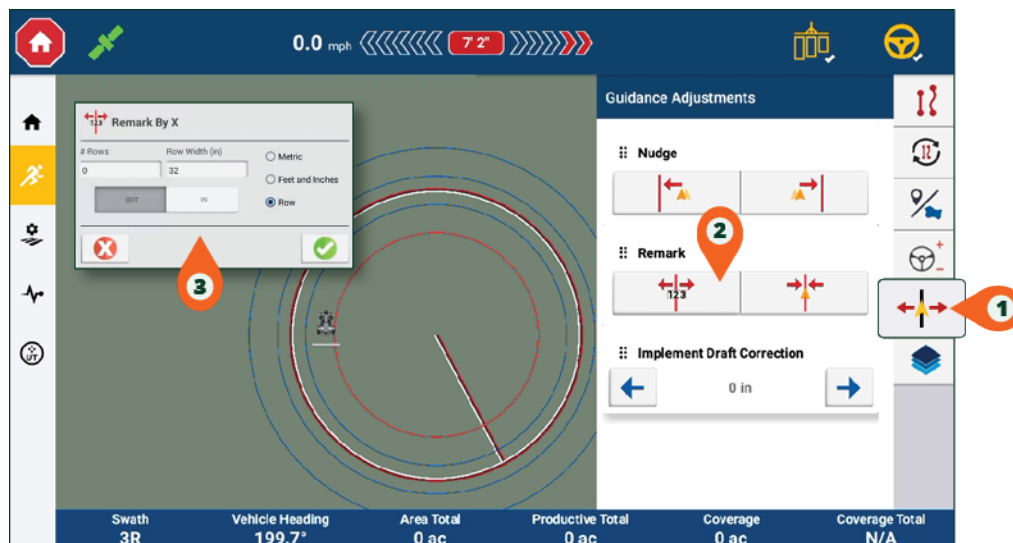
Pivot Remark

Remark by X

1. On the *Run* screen, tap the **Guidance Adjustment** icon.
2. In the *Guidance Adjustments* drawer, tap the **Remark By X** button.

The *Remark by X* window appears.

3. Enter the remark details and save the changes.



Remark by Distance

Optionally, tap the **Remark by Distance** button move the circular guidance pattern **In** or **Out** either by a set distance or by a system-defined row width:



This remark distance is used for the remaining task session run time. The guidance line is remarked - or moved - in relation to the highlighted guidance swath circuit and the vehicle's XTE upon entering the *Remark by Distance* menu.

In the *Remark by Distance* menu, you can customize the following units of measure for the Run screen's user interface:

- Select **Metric** to enter meters and centimeters to move the guidance line temporarily to the left or the right by the specified distance.
- Select **Feet and Inches** to enter feet and inches to move the guidance line temporarily to the left or the right by the specified distance.
- Select **By Row** to enter the number of rows to move the guidance line temporarily to the left or the right. The distance that a row equals is now a system setting in Guidance Preferences and can be adjusted in Remark or from the system settings.

NOTES –

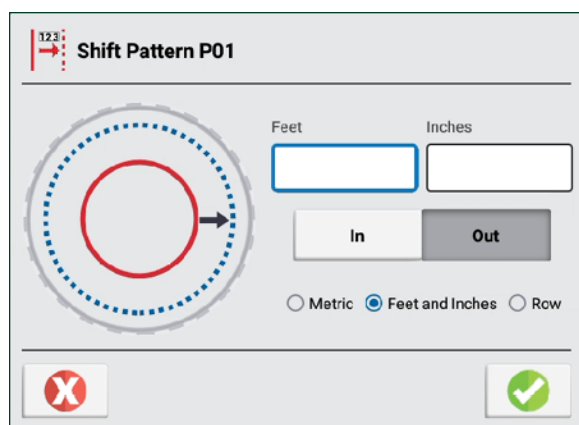
- Upon opening the Remark by Distance menu, the system defaults the direction and distance to what would make the cross track error become zero, if it is not already zero.
- The system unit of measure is the default unit of measure when entering this menu.

- Feet and Inch measures are rounded to the nearest inch.
- Pivot Pattern Remark by Distance uses **In** and **Out** from the reference swath, not **Left** or **Right**.

Pivot Shift

The Field Manager's *Guidance* tab allows Pivot Guidance Patterns to be shifted in a similar manner as AB lines and Curves can be permanently moved in a field.

1. On the Field Manager's Guidance Patterns screen, select a Pivot Pattern under **AB Guidance** and tap the **Shift** button.
2. On the Shift Pattern pop-up window, enter an **In** or **Out** offset distance to generate a new guidance pattern spacing while maintaining the original Pivot outer boundary.



3. The new pivot guidance pattern is automatically activated after creation and will be auto-named showing the original pivot name: **S** (shift), **I** (in) or **O** (out) to show the direction of the shift, and a final digit to show the distance in metric units how far it was shifted.

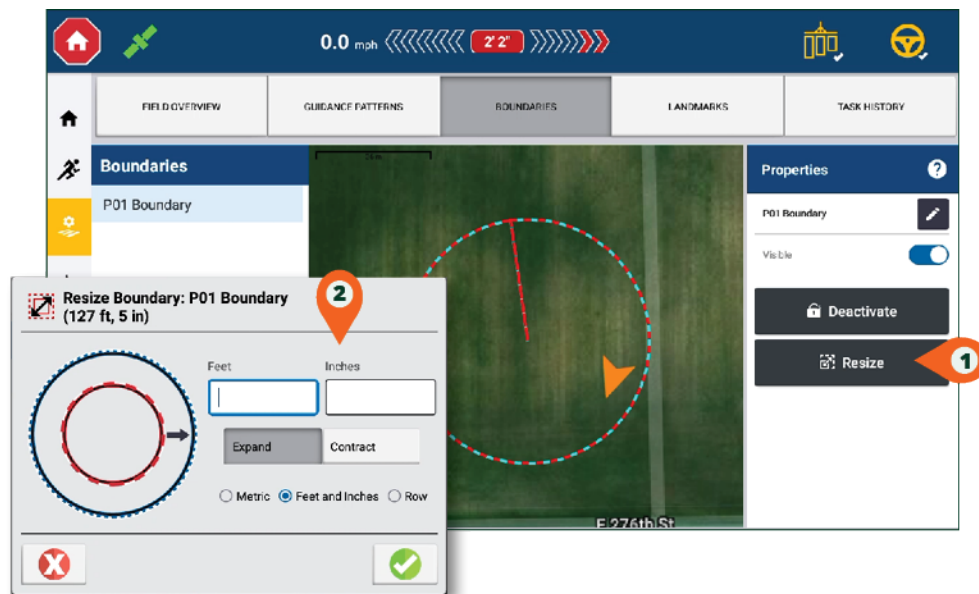
Pivot Resize

From the Field Manager's *Boundaries* tab, pivot boundaries can be resized in a similar way that field generic boundaries can be resized. This functionality creates a new permanent boundary within the field that has a new pivot radius. It can be used with any guidance pattern within the field once they are activated.

1. On the Field Manager's *Boundaries* screen, select a Pivot Pattern and tap the **Resize** button.

The *Resize Boundary* window appears.

2. Enter an offset distance to generate a new permanent pivot boundary.



The new pivot boundary is automatically activated after creation and will be auto-named showing the original pivot name: **R** (resize), **I** (in) or **O** (out) to show the direction of the shift, and a final digit showing the distance in metric units how far it was shifted.

Once the boundary is resized, the Field Manager *Boundaries* screen will update to show the newly resized boundary.

Landmarks (Point/Line/Area)

- Landmarks Overview
- Customizing Landmarks (Point/Line/Area)
- Assigning a Landmark Type to the Run Screen P/L/A Buttons
- Set Recording Position
- Customize Landmark Library
- Guide-to-Line

Landmarks Overview

As you perform work within a field, you can fine-tune the details about the field by using landmark markers. These markers allow you to identify specific points, lines, or area features that can affect how Precision-IQ records the work done.

1. On the *Run* screen, tap the **Landmarks** button:



A selection of landmark buttons appears.

2. Tap the **Landmarks** button again to hide the landmark selection buttons.

After you have created landmarks, you can edit them and assign them to categories using Field Manager's Landmark Manager feature (see [Customizing Landmarks \(Point/Line/Area\)](#)).

Points

Use the landmark point marker on the field map to identify landmarks such as:

- Generic (such as a gate, riser, tile inlet, water trough, well)
- Rock
- Pest or crop damage (such as from insects, weeds, etc.)
- Obstacle (hole, tree, hazard)

Landmark points can trigger warnings as you approach them.

To set a landmark point:

1. From the *Run* screen, tap the **Landmarks** button.
2. From the list of available landmark buttons, tap the **Point** button:



Precision-IQ places the marker at the vehicle's current location, based on the recording point.

3. Use Field Manager to edit, rename, or set alarms for a landmark point.
4. Tap the **Landmarks** button to close the list of available landmark buttons.

Lines

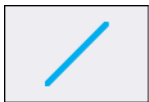
Use the landmark line marker to record a line such as:

- Generic (such as border, drip tape, path, road)
- Obstacle (cable, ditch, fence, hazard, pipe, river, stream, terrace, trees)

Landmark points can trigger warnings as you approach them.

To record a landmark line:

1. From the *Run* screen, tap the **Landmarks** button.
2. In the list of available landmark buttons, tap the **Line** button:



3. Position your vehicle where you want the landmark line to begin.
4. Tap the **Record** button:



Precision-IQ draws a dashed line beginning at the vehicle's current location, based on the recording point.

Tap the **Cancel** button if you need to discard the line path that is being recorded.

5. Drive to the end of the line you want to record and tap the **Record** button again to save the line.
6. Use Field Manager's Landmark Manager feature (see [Customizing Landmarks \(Point/Line/Area\)](#)) to edit, rename, or set alarms for a landmark line.
7. Tap the **Landmarks** button to close the list of available landmark buttons.

Areas

Use the landmark areas marker to record a shape marking a:

Area Type	Example
Productive Area	• Generic • Pest or crop damage (such as from insects, weeds, etc.) • Obstacle
Nonproductive Area	• Generic (such as clover, exclusion, grassed waterway, slough, waterway). • Obstacle (hazard, hole, lagoon, pond, rocks, tree). • Pest or crop damage (such as from disease, weeds, etc.).

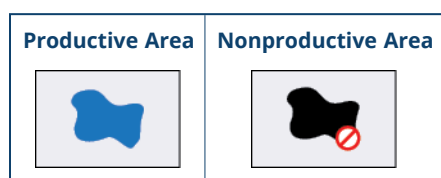
NOTE –

Productive-area landmarks are not used to switch sections on and off, but they can trigger warnings as you approach them.

Nonproductive area landmarks can be used to switch sections on and off.

To record a productive or nonproductive area:

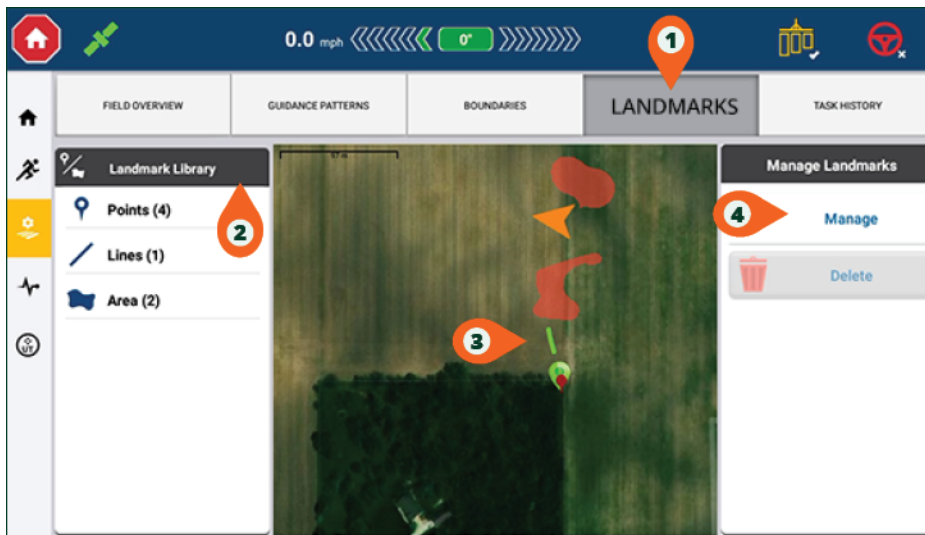
1. From the *Run* screen, tap the **Landmarks** button.
2. In the list of available landmark buttons, tap the area button you want to record:



3. Position your vehicle where you want the landmark area to begin. Tap the **Record** button. Precision-IQ places a marker beginning at the vehicle's current location, based on the recording point. Tap the **Cancel** button if you need to discard the area path that is being recorded.
4. Drive around the area you want to record and tap the **Record** button again to save the area.
5. Use Field Manager's Landmark Manager feature (see [Customizing Landmarks \(Point/Line/Area\)](#)) to edit, rename, or set alarms for a landmark area.
6. Tap the **Landmarks** button to close the list of available landmark buttons.

Customizing Landmarks (Point/Line/Area)

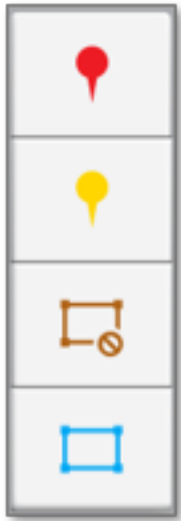
On the Field Manager screen's Landmark page, tap the **Manage** button to access a large library of preconfigured points, lines, and areas (as well as create your own custom P/L/A's) that can be assigned to any of the four Run screen point/line/area feature buttons. The Landmarks screen shows with the following settings:



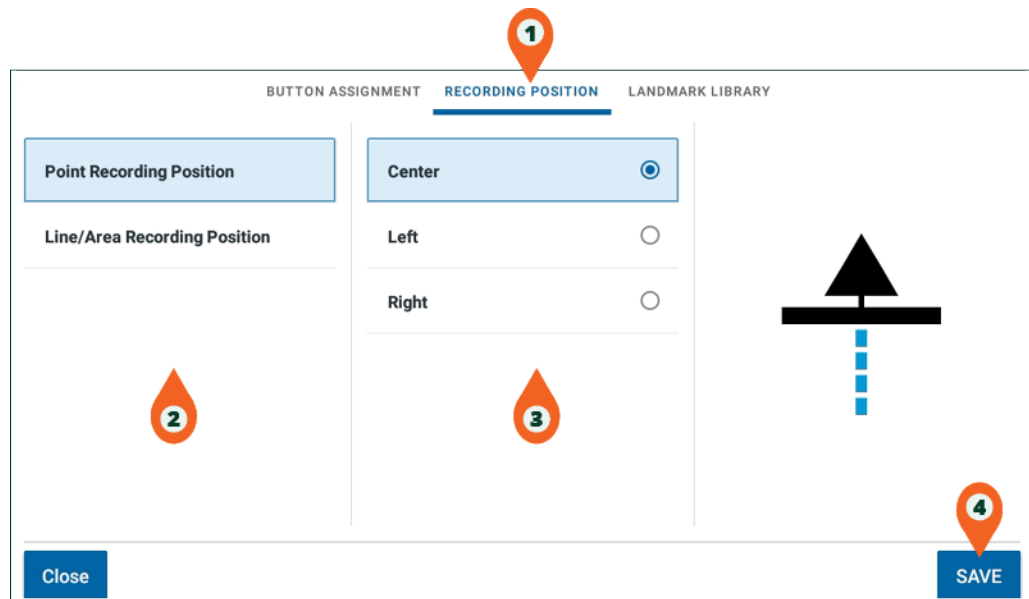
1. A **Landmark Library** that groups all point, line, and area landmarks together. For example, in the example above, you can see that 4 points have been applied to your field from the Run screen. Tap **Points** to view all point types (such as Gate, Hazard, Rock, Tree) that you have used, then tap a point type to see all points of that type and where they appear in your field.
2. **Color-coded landmarks** provide an at-a-glance overview of the variety of landmark types assigned to your field.
3. A **Manage** landmarks button for you to add and configure any number of landmark attributes. With this Manage button, you can:
 - Assign Landmarks from the comprehensive Landmark Library to the four Run screen point/line/area feature buttons.
 - Change recording point for feature points or for lines and areas.
 - Create user-defined landmarks and manage them in the Landmark Library.

Assigning a Landmark Type to the Run Screen P/L/A Buttons

When you tap the **Landmarks** button on the *Run* screen, there are four (4) buttons that appear:



To customize these buttons to fit the desired operation style, tap the **Manage** button on the *Field Manager* screen to open the Landmark Manager:



1. On the Manage Landmarks pop-up screen, tap **Button Assignment** (displayed by default) and tap the button you want to configure to select it.
2. Scroll the list of available landmarks and tap to select a new landmark type.
3. Scroll through the list of common landmark labels and tap the one best suited for your field.
4. Select a landmark type and color.
5. After you have assigned your landmark types, tap **Save** before leaving the Button Assignment tab.

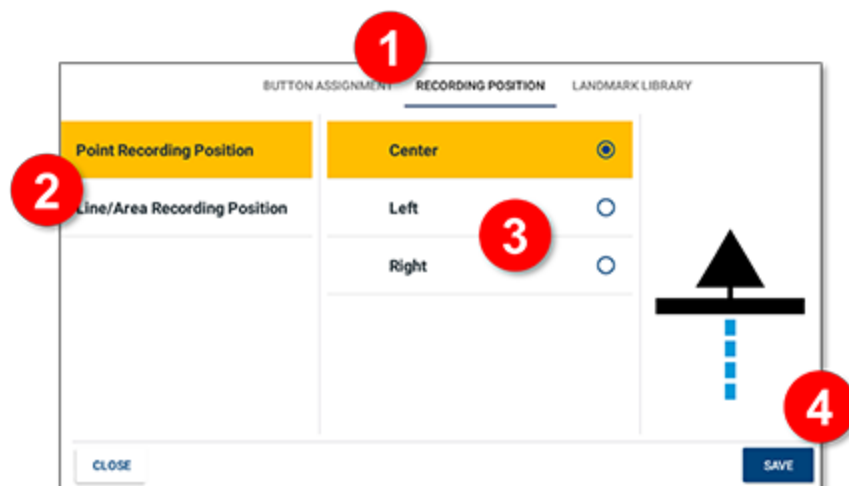
NOTE – You must tap **Save** any time you make a new button assignment.

When you return to the Run screen, the button will now show the new type of landmark you have assigned:



Set Recording Position

You can determine the position on the implement where a landmark is applied to a field:



1. On the Manage Landmarks pop-up screen, tap **Recording Position**.
2. Select either **Point Recording Position** or **Line/Area Recording Position**:
 - Tap **Point Recording Position** to set a position for landmark points (such as a tree, rock, gate, etc.)
 - Tap **Line/Area Recording Position** to set a position for landmark line (such as a fence, ditch, etc.) and area (such as, pond, obstacle, etc.)
3. Tap the position: **Center**, **Left**, or **Right**. The image will update to show the new position.

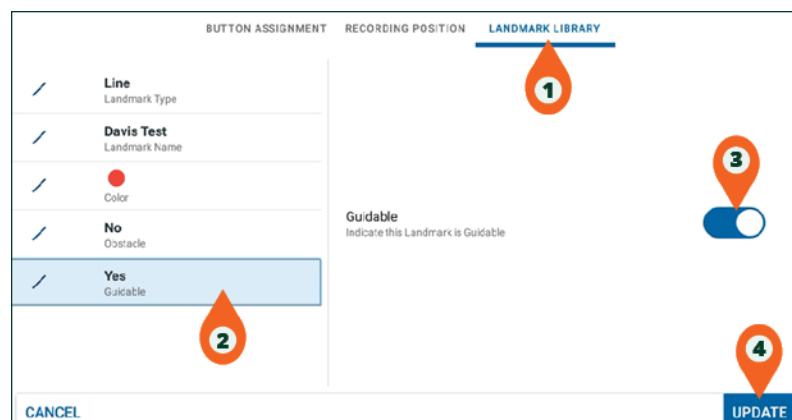
NOTE – The recording position corresponds to the defined application point of your implement.

4. Tap **Save**.

NOTE – You must tap **Save** any time you change the recording position.

Customize Landmark Library

You can customize an existing landmark or add a new one:



1. On the Manage Landmarks pop-up screen, tap **Landmark Library**.
2. Tap a landmark type on the left (Point, Line, Area) and tap the **Edit** button on the lower right.
Tap **New** if you want to create a new landmark.
3. Depending on the landmark type you select, you have several options that you can customize. For example, if you select a Line landmark, you can change the:
 - Landmark Name
 - Color
 - Obstacle: tap to toggle between **Yes** and **No**.
 - Guidable: tap to enable the line to be guidable. You'll need to enable this feature when you use Precision-IQ's Guide-to-Line function.
4. Tap **Update** (or **Create** if you are creating a new landmark).

NOTE – While you can create and modify any number of landmarks, **you cannot delete a landmark**. Use caution when creating a new landmark.

Guide-to-Line

On the Field Manager screen's Landmark page, you can activate a **Line with Coverage** button to appear on the Run screen with the point/line/area feature buttons. You can create a set of guidable feature lines within Precision-IQ, or you can import a field containing them from a USB drive.

Create a Line Set with Coverage

When you tap the **Landmarks** button on the Run screen, a fifth button can now be used specifically for creating a line set when coverage is applied:

The screenshot shows the 'BUTTON ASSIGNMENT' screen with the following elements:

- 1**: Points to the 'BUTTON ASSIGNMENT' tab at the top.
- 2**: Points to the 'As Applied Line' button in the 'GENERIC' list.
- 3**: Points to the 'As Applied' option in the 'RECORDING POSITION' list.
- 4**: Points to the 'LANDMARK NAME' and 'LANDMARK TYPE' fields.
- 5**: Points to the 'SAVE' button at the bottom right.

GENERIC	RECORDING POSITION	LANDMARK LIBRARY
Button 1	None	LANDMARK NAME: AS APPLIED LINE
Button 2	As Applied	LANDMARK TYPE: LINE
Button 3	Planned Li	COLOR: Yellow dot
Button 4	Tile 12	
As Applied Line (Line with Coverage)	Tile 8	
	Border	
	Cable	

1. On the Manage Landmarks pop-up screen, tap **Button Assignment** (displayed by default).
2. Select **Line with Coverage**.
3. Scroll the list of available lines and select a line name. In this example, the selection is **As Applied**.
4. Update the landmark options, as needed.
5. Tap **Save**.

NOTE – Changes must be saved before leaving the Button Assignment tab. Tap **Save** any time you make a new button assignment

When you return to the Run screen, the new **Line with Coverage** button will now appear:

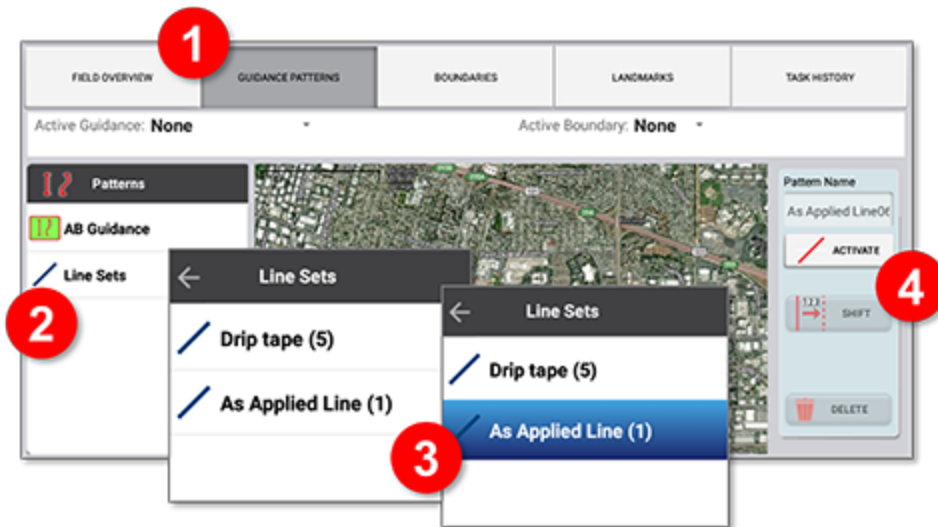


Like the other buttons, you can customize it in the Landmark Library tab. When you change the Line/Area Recording Position, the button on the Run screen will update to show the new position:



Activating Guidance Line Sets

To activate line sets for guidance, you must:



1. On the Field Manager screen, tap **Guidance Patterns** at the top of the screen.
2. In the Patterns pane, tap **Line Sets**. The pane updates to show all of your line sets that are guidable and which were created with the Landmarks tab.
3. Tap a line set to select it.
4. Tap **Activate**.

NOTES –

- A line set can only be guidable if the *Guidable line* attribute for the Line (in the Landmark Library) is set to **Yes**.
- If a field containing line sets is imported into Precision-IQ, the line sets will appear in the *Patterns* menu.
- Precision-IQ does not support fields that contain over 2,000 feature lines.

Licensed Features

- [Access Paths](#)
- [Tramlines](#)
- [Support for John Deere Runlines](#)

Precision-IQ supports a wide variety of agriculture assets, such as auto guidance, application control, and more. Features such as these require a license to be installed and enabled. The Precision-IQ *Run* screen automatically updates with the appropriate icons to accommodate any installed license. This chapter describes the licensed guidance features that can be integrated with other Precision-IQ functionality.

Access Paths

Precision-IQ includes the functionality to identify a set of AB line or Curve swaths that should be interrupted on a given interval to allow for an access path, or a designated right of way. An access path is a row in your field that is not in production, and is typically used for frequent right of way travel. This right of way does not interfere with production crop swaths in a field. For example, strawberry bedding typically needs defined access paths between planted beds to move harvest vehicles and people through the field.

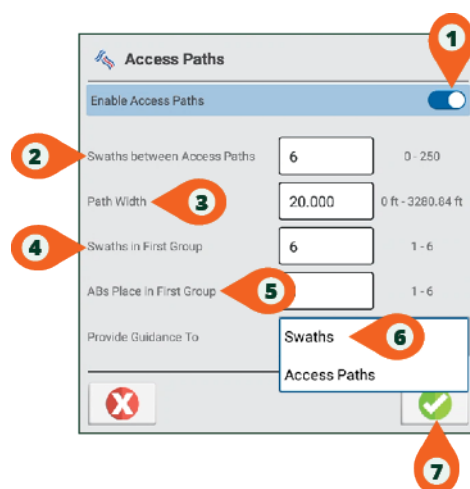
On the Field Manager's *Guidance Pattern* screen, tap the **Access Path** button:



Creating an Access Path

Follow the steps below to create an access path:

1. In the Run screen, create an **AB line** or **Curve**.
2. Tap the **Field Manager** icon in the Activity Bar, and then tap the **Guidance Patterns** tab.
3. In the Patterns pane, tap **AB Guidance** and select an AB line that you want to define as an access path.
4. Activate the selected AB line.
5. Tap the **Access Paths** button. The Access Paths pop-up window appears:



6. Update the following settings:
 - a. **Enable Access Paths:** By default, Access Paths is disabled. Tap the switch to enable the feature.
 - b. **Swaths between Access Paths:** Enter the number of swaths between the access path.
 - c. **Path Width:** Enter the width of the access path. Use a width of the expected traffic flow.

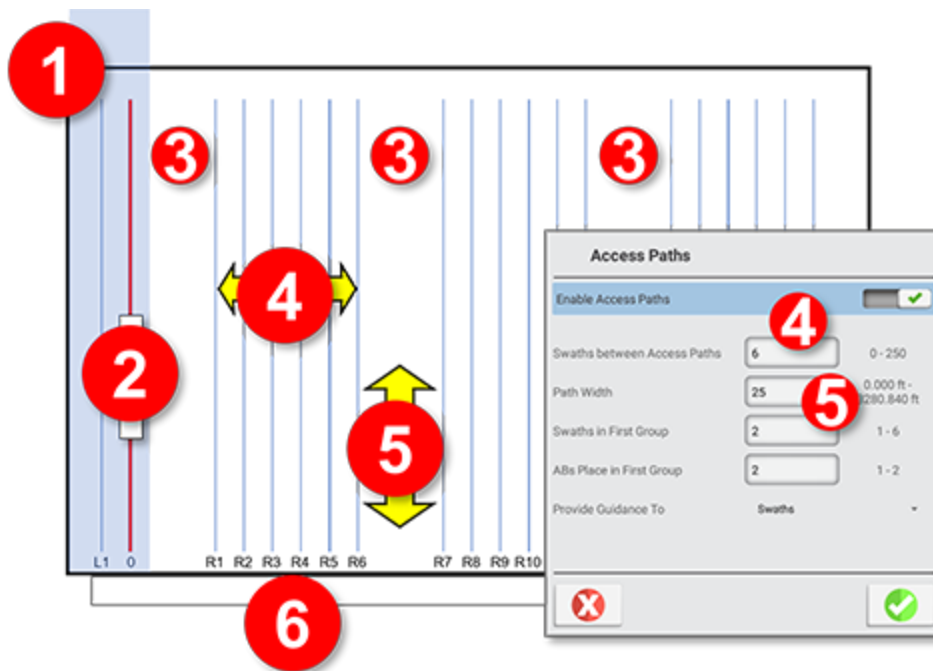
- d. **Swaths in the First Group:** The very first group may not be the same as the repeating swaths. Enter the number of swaths to repeat before the first right of way access path break.
 - e. **ABs Place in the First Group:** The location of the Master AB Line or Curve within the first group.
 - f. **Provide Guidance To:** Default is guide to **Swaths**.
7. Tap the green check mark.

NOTE – Access Path is not supported with the use of Pivot or Headland guidance patterns.

NOTE – Currently, the Provide Guidance to setting only supports Swaths.

Access Paths in the Field

Once you have configured your access path settings, the swaths of your field will look something like this:

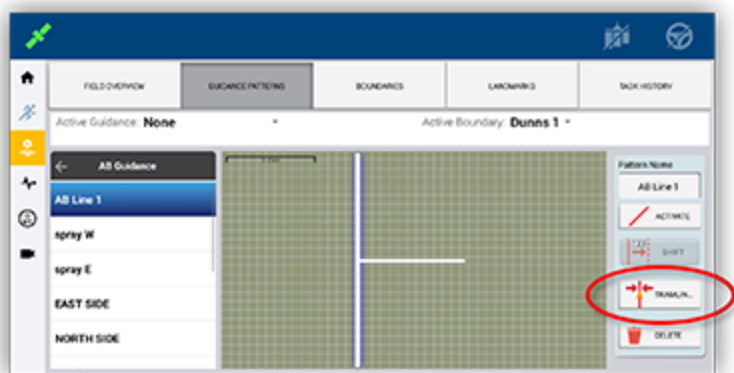


Item	Description
1	First group
2	AB line
3	Access path
4	Swaths between access paths
5	Path width
6	Rows

Tramlines

A **tramline** (also referred to as *controlled traffic farming*) allows you to highlight the guidance swaths on which the planter/drill should have the tramline system row(s) shut off. This functionality is available for straight line AB and A+ for inline and offset tramline functionality. Curve tramline functionality is for inline (non-offset) tramlines only. Precision-IQ's tramline functionality supports both centrally mounted and double-pass tramline systems

On the Field Manager's *Guidance Patterns* screen, tap the **Tramline** settings button to get started:

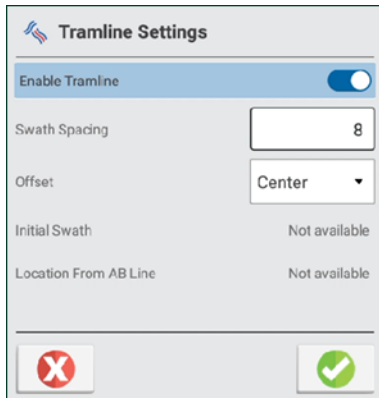


Centrally Mounted Tramline System Setup

1. On the Activity bar, tap the **Field Manager** icon. Then tap **Guidance Patterns** at the top of the screen.
2. In the list of All Guidance, tap **AB Guidance**.
3. Tap an **AB Line**, **A+ Line**, or **Curve** to which you want to assign the Tramline functionality. This action should highlight the pattern on the map. Tap the **Tramline** button on the pattern adjustment panel.
4. On the *Tramline Settings* pop-up window:
 - a. Tap the **Enable Tramline** toggle to activate tramline functionality for the selected line.
 - b. Set the **Swath Spacing** value based on the cycle interval.
 - c. Select the Offset to be **Center**.
 - d. Tap the green check to save the settings.

NOTE – Curves only allow center offsets. The **Initial Swath** and **Location From AB Line** are

status items only.



Tramline Settings

Enable Tramline ☒

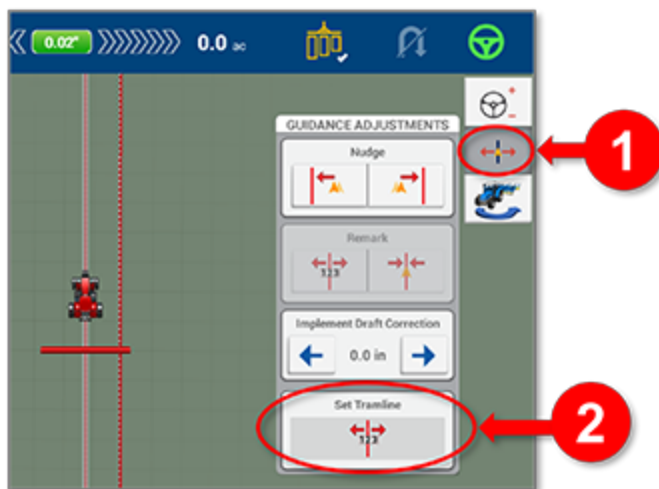
Swath Spacing

Offset

Initial Swath Not available

Location From AB Line Not available

- When in the Run screen **and** on the pass that you want to designate as the start of the tramline cycle interval, tap the (1) **Guidance Adjustments** button and then tap the (2) **Set Tramline** button on the pop-up.



A confirmation pop-up will ask if you want to create a guidance line in this location for the following operations that will use the tramline (for example, spraying). If so, tap **OK**; otherwise, tap **Cancel**.

- The Run screen will update to show Tramline shutoff rows highlighted with a white background behind the swaths.

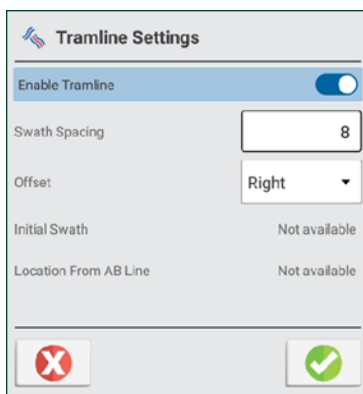
NOTE – If changes are to be made to the tramline settings (for example, if you need to change the offset), then you must tap the **Set Tramline** button again on the desired swath for the changes to be applied.

Double-Pass Tramline System Setup

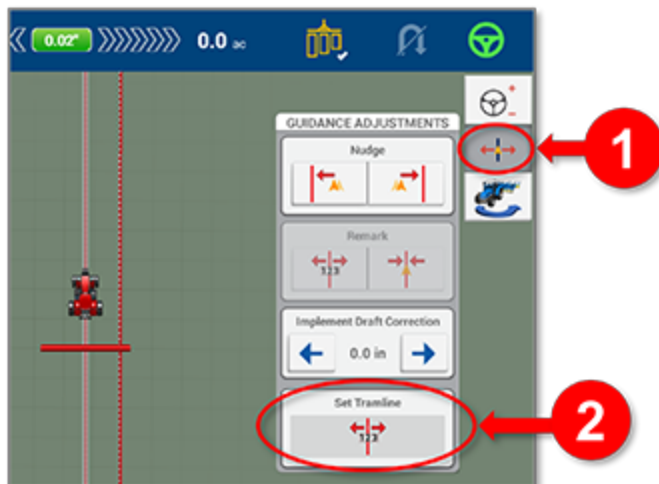
- On the Activity bar, tap the **Field Manager** icon. Then tap **Guidance Patterns** at the top of the screen.
- In the list of All Guidance, tap **AB Guidance**.

3. Tap an **AB Line**, **A+ Line**, or **Curve** to which you want to assign the Tramline functionality. This action should highlight the pattern on the map. Tap the **Tramline** button on the pattern adjustment panel.
4. On the *Tramline Settings* pop-up window:
 - a. Tap the **Enable Tramline** toggle to activate tramline functionality for the selected line.
 - b. Set the **Swath Spacing** value based on the cycle interval.
 - c. Select the **Offset** to be **Left** or **Right** based on implement setup.
 - d. Tap the green check to save the settings.

NOTE – Curves only allow center offsets. The **Initial Swath** and **Location From AB Line** are status items only.



5. When in the Run screen **and** on the pass that you want to designate as the start of the tramline cycle interval. Tap the (1) **Guidance Adjustments** button and then tap the (2) **Set Tramline** button on the pop-up:



A confirmation pop-up will ask if you want to create a guidance line in this location for the following operations that will use the tramline (for example, spraying). If so, tap **OK**; otherwise, tap **Cancel**.

6. The Run screen will update to show Tramline shutoff rows highlighted with a white background behind the swaths.

NOTE – If changes are to be made to the tramline settings (for example, if you need to change the offset), then you must tap the **Set Tramline** button again on the desired swath for the changes to be applied.

Support for John Deere Runlines

Precision-IQ's Data Transfer function can include a **merge** operation so that John Deere field data can be imported into existing Precision-IQ field data sets. Without this merge option, John Deere field data transferred to the display would be copied as new (where the data did not exist on the display) or copied as overwrite (where the data on the display is overwritten with the new data).

This merge feature requires the Advanced Guidance 1 license to be installed on the Precision-IQ display **and** on any Precision-IQ display where the John Deere runlines will be used:

Part Number	Description
96552-16	License, Multi-Platform, Guidance: Advanced Guidance 1, No Expiry

NOTE –

- The “Guidance: Advanced Guidance 1” license unlocks the ability to use John Deere Guidance lines in the Run screen and also allows the user to **Guide to Access Paths** if they are used by the organization.
- If the display previously included a *Guide to Access Paths* license, then you already have the required license for John Deere runlines to be active.

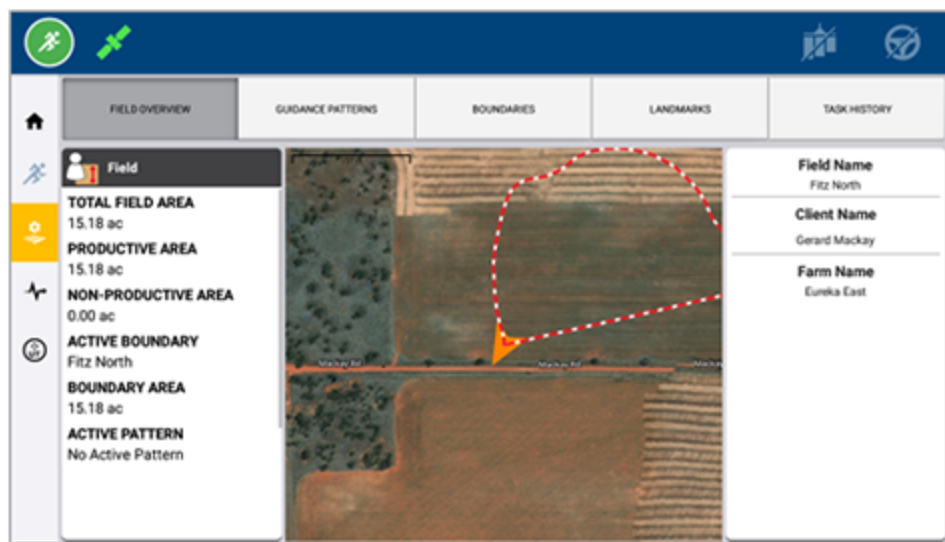
Once the license is installed, there are two main steps for adding a John Deere runline to your field data set:

1. [Merging a John Deere Runline into a Precision-IQ Display](#)
2. [Calibrating a John Deere Runline](#)

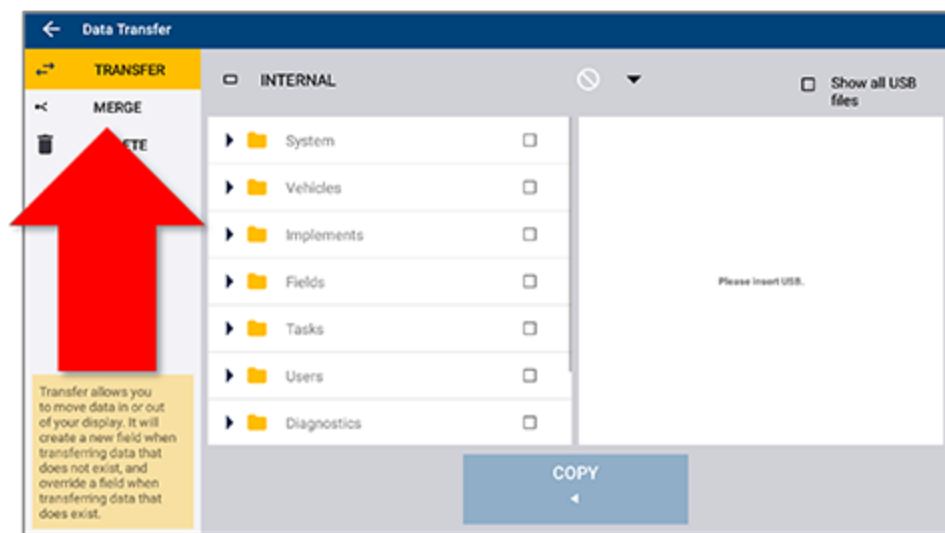
Merging a John Deere Runline into a Precision-IQ Display

NOTE – This step assumes that you have exported a John Deere RCD field file to a USB drive. The exported file should be saved to the USB's root folder.

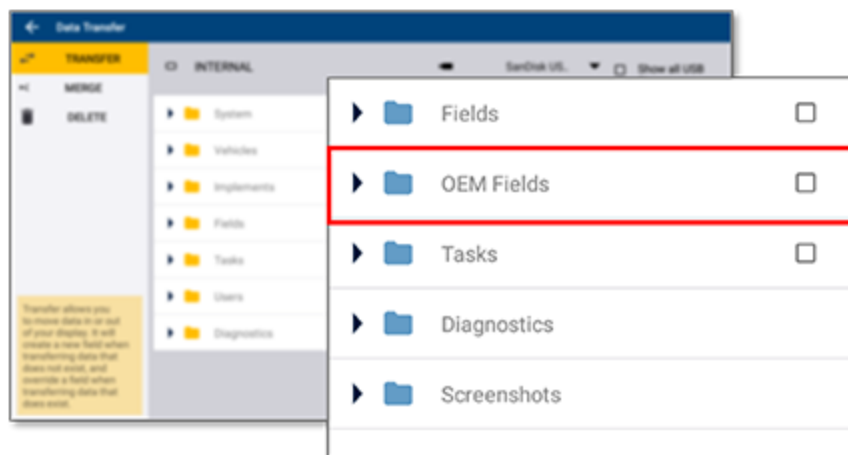
For this step, a John Deere runline will be merged into the Precision-IQ's field data set. Here is an example of a field before the merge:



On the Precision-IQ Home screen, tap **Data Transfer**. These are the transfer options on the Data Transfer screen (transfer, merge, delete):



Now, insert a USB drive with the field data that you want to transfer. The Data Transfer page will update to show the Precision-IQ-compatible contents of the USB drive. The exported John Deere runline will be saved in the **OEM Fields** folder:

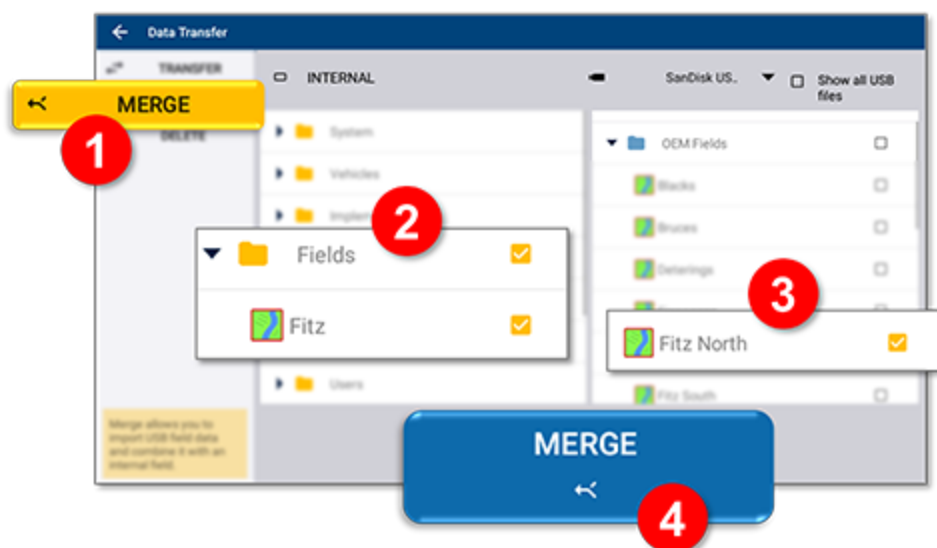


Follow the steps below to merge the new John Deere data into an existing Precision-IQ field:

NOTE – If the field created on the John Deere does not exist within the Precision-IQ field data set; then use the traditional **transfer** UI to bring the field and AB lines into the system.

1. Tap **Merge** in the upper-left part of the screen.
2. On the display side (INTERNAL), navigate to and select the field that you want to update.
3. Navigate to and select the field from the USB drive that you want to merge onto the display (John Deere data format only).
4. With both profiles selected, tap the now-active **Merge** button.

Only one source field and one destination field can be selected at one time.



Once the merge is complete, review the field data to see that the new data is added:



Calibrating a John Deere Runline

Once the runlines are merged, they need to be calibrated to work within the Precision-IQ environment. In Precision-IQ, enter the Run screen. A pop-up message will appear informing you that there are uncalibrated lines within this field. Drive the vehicle to the John Deere runline's original location.

Tap **Calibrate** on the pop-up message or access the calibrate drawer using the button on the right feature bar.

Follow the steps below to calibrate a John Deere runline.

1. Select a line that needs to be calibrated from the drop-down list.
Drive the vehicle to the John Deere runline's original location.
2. Tap the **Calibrate Line** button.
3. The Run screen will update to adjust the line to the correct location. The distance value will automatically be entered. You can update the values if needed.
4. Tap the **Apply** button. It is recommended that you drive the line and adjust the calibration point as needed.
5. Repeat until you are satisfied with the runline. Tap **Save**.



