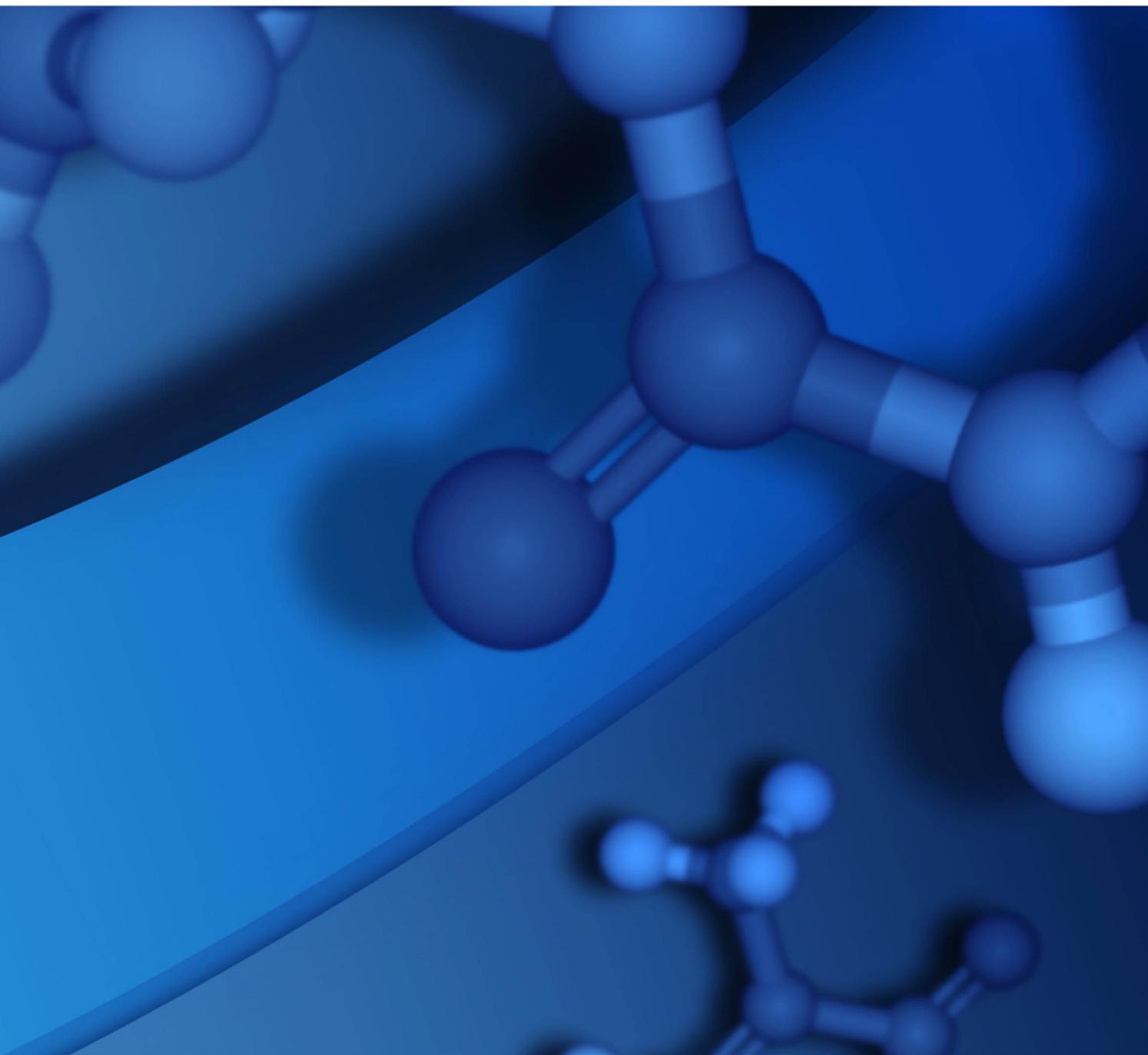


SYSTEM ADMINISTRATION GUIDE

BIOVIA ENVIRONMENTAL MONITORING

1.1 SP3



BIOVIA Copyright Notice

© 2014 Dassault Systèmes. All rights reserved. 3DEXPERIENCE, the Compass icon and the 3DS logo, CATIA, SOLIDWORKS, ENOVIA, DELMIA, SIMULIA, GEOVIA, EXALEAD, 3D VIA, BIOVIA and NETVIBES are commercial trademarks or registered trademarks of Dassault Systèmes or its subsidiaries in the U.S. and/or other countries. All other trademarks are owned by their respective owners. Use of any Dassault Systèmes or its subsidiaries trademarks is subject to their express written approval.

Acknowledgments and References

BIOVIA may grant permission to republish or reprint its copyrighted materials. Requests should be submitted to BIOVIA Support, either through electronic mail to support@accelrys.com, or in writing to:

BIOVIA Support
5005 Wateridge Vista Drive, San Diego, CA 92121 USA



Table of Contents

Chapter 1 Introduction to BIOVIA Environmental Monitoring	
Intended Audience.....	1-1
Accelrys Becomes BIOVIA	1-1
Introduction to BIOVIA Environmental Monitoring	1-2
Location Types	1-2
Locations.....	1-3
Sample Types and their workflows	1-3
Sampling Plans.....	1-3
Sample Groups.....	1-3
Samples.....	1-4
Getting Started - Configuration Tasks For New Installations.....	1-5
Configuration Tasks For Upgrading from Existing Installations	1-6
Client Requirements	1-6
Launching the BIOVIA LIMS Application	1-7
Signing On	1-7
Environmental Monitoring Components in the User Interface.....	1-8
Environmental Monitoring User Eligibilities	1-9
How Date/Time Values are Recorded in the Module	1-10
How date/time values are recorded when adding samples to the system.....	1-10
How date/time values are recorded when adding Sampling Plans to the calendar	1-10
How date/time values are recorded for a Time Trigger activity.....	1-10

Table of Contents

Chapter 2	Managing Location Types
What is a Location Type?.....	2-1
Required Eligibility for Managing Location Types.....	2-2
Status Codes for Location Types	2-2
Viewing Configured Location Types.....	2-4
Creating a New Location Type	2-6
Configuring the Properties of a Location Type	2-7
Adding a new property to a Location Type.....	2-8
Description of Location Type properties	2-10
Boolean (True/False) property	2-10
Date property	2-11
File Upload property	2-11
Link property	2-12
List property	2-12
Numeric property	2-13
Text property	2-13
Text (Multiple Lines) property	2-13
Organizing the Properties of a Location Type.....	2-14
Editing a Location Type.....	2-17
Editing the definition of a Location Type.....	2-17
Editing the properties of a Location Type.....	2-19
Deleting the properties of a Location Type	2-20
Upgrading a Location Type	2-20
Inactivating a Location Type	2-20
Deleting a Location Type	2-20
Exporting Configured Location Types to Other Systems.....	2-21
What's Next?	2-21
Chapter 3	Managing Locations
What is a Location?	3-1
Required Eligibility for Managing Locations	3-2
Status Codes for Locations	3-2
Viewing Configured Locations	3-3
Creating a Root Location	3-5
Creating a Child Location.....	3-7
Editing Locations.....	3-9
Editing a single location.....	3-9
Editing multiple child locations	3-11
Inactivating a Location.....	3-12
Deleting a Location.....	3-12
Exporting Configured Locations to Other Systems	3-13
What's Next?	3-13

Chapter 4 Managing Sample Types

What is a Sample Type?.....	4-1
Required Eligibility for Managing Sample Types.....	4-3
Status Codes for Sample Types	4-3
Viewing Configured Sample Types.....	4-4
Creating a New Sample Type	4-6
Configuring the Properties of a Sample Type	4-8
Adding a new property to a Sample Type	4-8
Description of Sample Type Properties	4-10
Accelrys LES Procedure property	4-11
Barcode property	4-11
Boolean (True/False) property	4-12
Calculate Duration property	4-12
Calculate Numeric property	4-14
Calculate Point in Time property	4-17
Date property	4-19
Date and Time property	4-20
Date Interval property	4-21
Duration property	4-22
File Upload property 2	4-23
Limit Specification property	4-23
Link property	4-25
List property	4-25
Numeric property	4-26
Relationship property	4-26
Text and Text (Multiple Lines) property	4-29
User property	4-30
Example—Configured Properties for a Contact Plate.....	4-31
Organizing the Properties of a Sample Type.....	4-33
Cloning a Sample Type.....	4-33
Editing a Sample Type.....	4-34
Editing the definition of a Sample Type.....	4-34
Editing the properties of a Sample Type.....	4-35
Deleting the properties of a Sample Type	4-37
Generating a Workflow Qualification Report for a Sample Type.....	4-37
Upgrading a Sample Type	4-39
Inactivating a Sample Type	4-39
Deleting a Sample Type	4-40
Exporting Configured Sample Types to Other Systems.....	4-40
What's Next?	4-40

Table of Contents

Chapter 5 Configuring Workflows for Sample Types	
What is a Workflow?	5-1
Example of a Configured Workflow for a Sample Type	5-2
“Scheduled” state.....	5-3
“Sampled” state.....	5-5
“Incubating” state	5-5
“Ready to Read” state.....	5-6
“Requires ID” state	5-8
“ID Under Test” state.....	5-8
“Requires Review” state	5-9
“Approved” state	5-9
Required Eligibilities for Configuring Workflows	5-10
Launching the Workflow Editor	5-10
The Default Workflow for Sample Types	5-12
Configuring Workflow States	5-12
How workflow states are represented in the user interface ...	5-13
Adding states to a workflow	5-14
Reordering the sequence of workflow states.....	5-15
Deleting states from a workflow	5-16
Configuring Workflow Actions.....	5-17
Description of workflow actions.....	5-18
User Defined action	5-18
Accelrys LES Session Complete action	5-18
Approve action.....	5-19
Waste action	5-19
How workflow actions are represented in the user interface .	5-20
Adding an action to a workflow state.....	5-21
Reordering actions within a state.....	5-22
Renaming a “User-Defined” action.....	5-22
Copying an action to a different workflow state	5-23
Deleting a workflow action	5-23
Configuring Workflow Activities	5-23
About group workflow activities	5-26
Description of workflow activities.....	5-27
Accelrys LES Procedure activity	5-27
Apply Property Limit activity	5-31
Create Entity activity	5-33
Display Property activity	5-34
E-Signature activity	5-35
Execute Platform Protocol activity.....	5-37
Restrict Group Access activity	5-42
Scan ID activity	5-44
Set Instruction Text activity	5-45

Table of Contents

Set Property activity	5-46
Configuring Set Property activity for a Relationship	
property	5-48
Set Sample ID activity	5-50
Set State activity	5-51
Time Trigger activity	5-54
Adding an activity to a workflow action.....	5-56
Reordering the activities within a workflow action.....	5-56
Deleting a workflow activity.....	5-56
Editing a Configured Workflow.....	5-57
Deleting a Workflow	5-58
Exporting Configured Workflows to Other Systems	5-58
Viewing Audit Trails for Workflows	5-58
What's Next?	5-58

Chapter 6 **Managing Sampling Plans**

What is a Sampling Plan?.....	6-1
About Sampling Frequency.....	6-2
Routine testing	6-2
Random testing	6-3
Required Eligibility for Managing Sample Types.....	6-3
Status Codes for Sampling Plans.....	6-3
Viewing Configured Sampling Plans	6-5
Creating a New Sampling Plan.....	6-6
Editing a Sampling Plan	6-9
Upgrading a Sampling Plan	6-12
Inactivating a Sampling Plan.....	6-12
Deleting a Sampling Plan	6-12
Exporting Sampling Plans to Other Systems	6-12
What's Next?	6-12

Chapter 7 **Creating Barcode Labels for Sampling Plates**

Prerequisites	7-1
Configuring the Label Document.....	7-2
Printing Barcode Labels for Sampling Plates.....	7-8

Table of Contents

--- Blank Page ---



1

Introduction to BIOVIA Environmental Monitoring

Intended Audience

This manual is intended for the system administrator or other qualified personnel that is responsible for configuring the BIOVIA Environmental Monitoring (EM) application, a module of the BIOVIA Laboratory Information Management System (LIMS).

Accelrys Becomes BIOVIA

Accelrys and Dassault Systèmes have joined forces with the purpose of “providing business and people with 3DEXPERIENCE universes to imagine sustainable innovation capable of harmonizing Product, Nature & Life.” BIOVIA continues to support those products previously released by Accelrys, but some products names have been re-branded as described in the following table.

Note: This release references the new product names. However, some areas of the user interface may not be updated until a future release.

Previous Accelrys Product Name	Current BIOVIA Product Name	Abbreviation
Accelrys Laboratory Information Management System	BIOVIA Laboratory Information Management System	LIMS
Accelrys Inventory Management	BIOVIA Inventory	IM
Accelrys Environmental Monitoring	BIOVIA Environmental Monitoring	EM
Accelrys Lab Execution System	BIOVIA Lab Execution System	LES
Accelrys Electronic Batch Records	BIOVIA Electronic Batch Records	EBR

Introduction to BIOVIA Environmental Monitoring

The BIOVIA LIMS core software provides the user authentication and administrative functions for the entire system including its web-based modules—BIOVIA Inventory (IM) and BIOVIA Environmental Monitoring (EM). These functions include:

- System Settings
- Sites
- User Roles
- User Accounts
- User Groups
- Entity Types
- Entity Tabs
- Labels
- Export/Import
- Reports

These core functions are documented in the *BIOVIA LIMS System Administration Guide*, available on the BIOVIA Download Center.

BIOVIA Environmental Monitoring (EM) provides functionality to administer, schedule, and execute various types of environmental sampling in your environment. The following entities are specific to the EM module:

- Location Types
- Locations
- Sampling Locations
- Sample Types and their workflows
- Sampling Plans
- Sample Groups
- Samples

These entities are explained in the following sections.

Location Types

A *Location Type* represents one type of location that is used for a specific purpose in your environment. In BIOVIA LIMS, you can define Location Types for three different types of locations:

- **General Location**—Represents general locations in your environment (for example, a building, lab, or a room). This Location Type is applicable to the BIOVIA Inventory and BIOVIA Environmental Monitoring modules.
- **Storage Location**—Represents various storage locations for your consumables (for example, a cabinet, shelf, or bin). This Location Type is specific to the BIOVIA Inventory module.
- **Sampling Location**—Represents the various locations for which samples are taken for environmental monitoring purposes (for example, a location in a room or on a person). This Location Type is specific to the BIOVIA Environmental Monitoring module.

In the Environmental Monitoring module, you will create general Location Types to represent your facility and filling/production rooms, and two “sampling” Location Types to represent a sampling point in a room and a sampling point on a person.

Locations

A *Location* represents one instance of a defined Location Type. Locations are based on a hierarchy of the different types of locations in your environment. The top-level or root location typically represents the facility or building in which the sampling is required. Child locations represent the rooms or labs in the building, and subsequently, the actual sampling locations in each. A sampling location can be a physical location within a room or a location on a person, such as the right hand, left hand, or hood.

Sample Types and their workflows

Sample Types are the underlying concept of the EM module. A Sample Type represents one type of sampling done in your environment—for example, a contact plate, a settling plate, or an air sample. The first step in configuring the Environmental Monitoring module is to create one *Sample Type* for each type of sampling method you use. Each Sample Type will be configured with properties that are common to all samples based on that type, such as an “Incubation Start” and “Incubation End” property or a “CFU Total” property that will collect the total number of colony forming units on a sample. When you create a Sample Type, you will specify which of your Sampling Locations will use this type of sampling.

For laboratory personnel who are performing the actual sampling, the actions they can perform on a sample are dictated by the workflow of its parent Sample Type. Each Sample Type contains a workflow which defines the life cycle of its sample instances from the time they are scheduled to the time they are completed and approved. The workflow provides the appropriate actions that can be performed at any given state of the sample—for example, Sample, Incubate, or Read.

The Environmental Monitoring module provides a default workflow that consists of three states that are common to all samples—Scheduled, Sampled, and Approved. You can customize the default workflow as necessary for each new Sample Type that you create.

Sampling Plans

A *Sampling Plan* defines how frequently environmental testing should be performed on a selected group of sampling locations in your environment.

Sample Groups

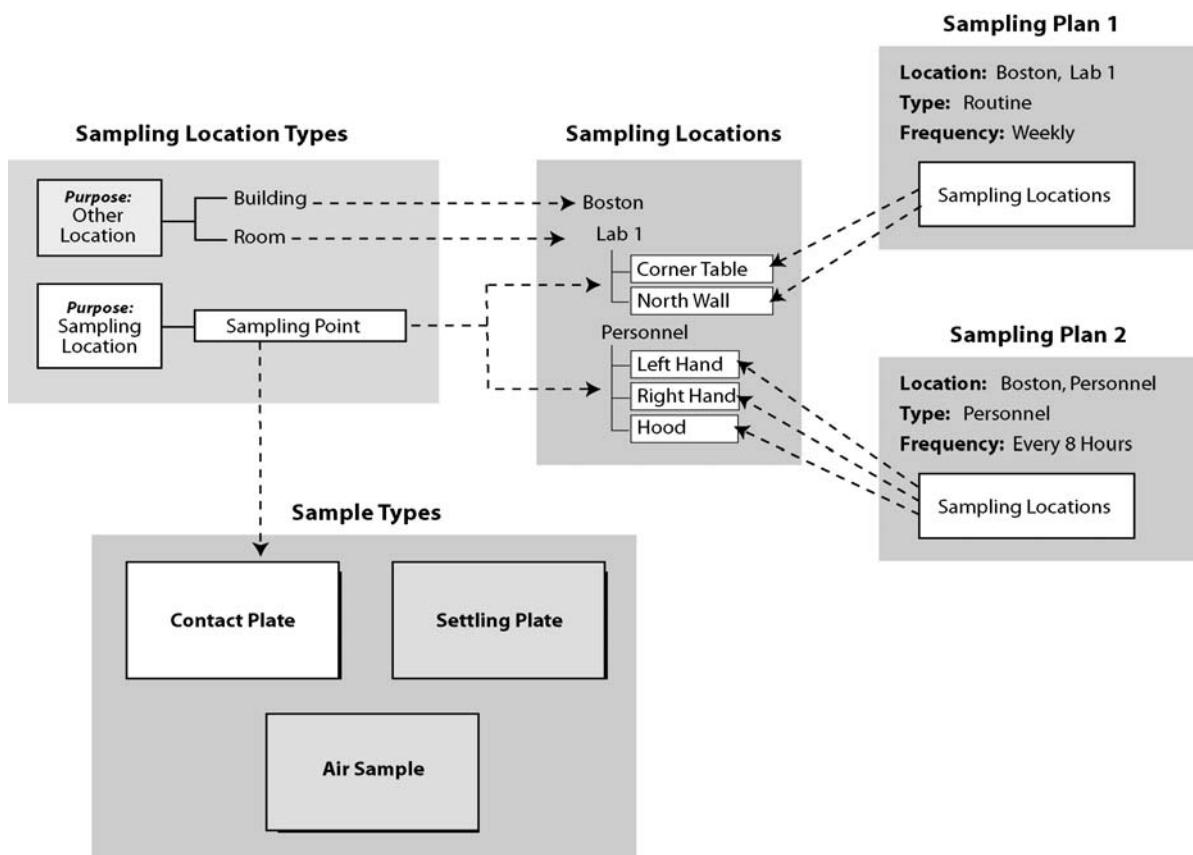
A *Sample Group* is one group of samples that is scheduled for specific sampling locations according to the frequency defined in a Sampling Plan. The master scheduler at your site will schedule the Sample Groups for the required dates. For details on how to configure Sample

Groups, refer to the *BIOVIA Environmental Monitoring User Guide*, available on the BIOVIA Download Center.

Samples

A *sample* is one instance of a Sample Type and represents one type of sampling that is performed on a specific location. The actions that you can perform on a sample are dictated by the workflow of the Sample Type on which the sampling is based (for example, a Contact Plate Sample Type). The laboratory personnel will perform the actual sampling based on the Sampling Plan specified for the Sample Group to which the sample belongs. For details on how to execute workflows for samples, refer to the *BIOVIA Environmental Monitoring User Guide*, available on the BIOVIA Download Center.

The following figure shows the relationship between Sample Types, Location Types, Locations, and Sampling Plans.



Relationship between Location Types, Locations, Sample Types, and Sampling Plans

Getting Started - Configuration Tasks For New Installations

The following table lists the tasks required to configure a new BIOVIA LIMS v4.2 SP3 installation that includes BIOVIA Environmental Monitoring v1.1 SP3.

Table 1-1 Sequence of Configuration Tasks for New Installations

Step	Task	Description	Refer to:
1	Configure BIOVIA LIMS core functionality	Configure: <ul style="list-style-type: none">• System Settings• Sites• User Roles and assign users• User Accounts• User Groups• Entity Types (optional for EM)• Entity Tabs (optional for EM)	BIOVIA LIMS System Administration Guide
2	Create Location Types	Create new Location Types for the types of physical and sampling locations in your environment (for example, a building, a room, or a storage location).	Chapter 2, <i>Managing Location Types</i>
3	Create Locations	Create new Location instances based on the Location Types that you created in Step 2.	Chapter 3, <i>Managing Locations</i>
4	Create Sample Types	Create a Sample Type for each sampling method used in your environment.	Chapter 4, <i>Managing Sample Types</i>
5	Configure Workflows for Sample Types	Configure the workflow for each Sample Type you created in Step 4. The workflow defines the actions that can be performed on a sample during its life cycle in the system.	Chapter 5, <i>Configuring Workflows for Sample Types</i>
6	Create Sampling Plans	Create Sampling Plans that 1) specify the sampling locations to which that sampling plan will apply, and 2) define how frequently the sampling should be performed on those locations.	Chapter 6, <i>Managing Sampling Plans</i>

Table 1-1 Sequence of Configuration Tasks for New Installations (continued)

Step	Task	Description	Refer to:
7	Configure barcode labels for sampling plates	Configure and print barcode labels for sampling plates, if necessary.	Chapter 7, <i>Creating Barcode Labels for Sampling Plates</i>
8	Configure Reports	Configure report templates and register reports that can generate data on various entities in the system.	
9	Export configured entities and import them into other systems	Export your configured entities to an XML file so you can import and deploy them on other systems. These include any of the BIOVIA LIMS entities as well as those specific to the EM module: <ul style="list-style-type: none"> • Location Types • Locations • Sample Types • Sampling Plans 	BIOVIA LIMS System Administration Guide

Configuration Tasks For Upgrading from Existing Installations

There are no additional configuration tasks required for upgrading a current BIOVIA Environmental Monitoring system.

Client Requirements

Verify the following settings on every client machine:

- **Compatibility View**—Make sure Internet Explorer’s Compatibility View is turned off. Refer to the *BIOVIA LIMS Application Server Installation Guide* for more information.
- **Allow Pop Ups**—If you plan on using BIOVIA Pipeline Pilot in conjunction with the BIOVIA EM application, configure your browser’s Pop-up Blocker Settings to “Allow pop-ups” from the BIOVIA LIMS site address. This should be done on every client running the BIOVIA IM application. This is also necessary to test a workflow that contains an Execute Platform Protocol activity.

Launching the BIOVIA LIMS Application

To launch the BIOVIA LIMS application, open an Internet Explorer browser window and perform the appropriate step:

- From the BIOVIA LIMS server:

Enter one of the following URLs in the address bar:

localhost or 127.0.0.1

- From a BIOVIA LIMS client machine:

Enter the following URL in the address bar:

`http://<computer name>:<port number>`

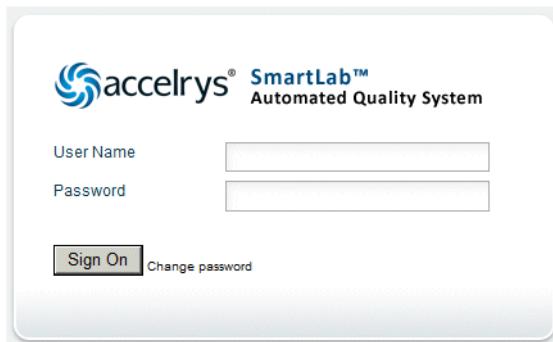
where *computer_name* is the name of the server on which the application is installed and *port_number* is the port number specified during installation (typically port 80).

Signing On

Once you have launched the application, your browser will load one of the following pages, depending on what type of authentication method your system is using:

- **ePMC Authentication (default)**

The browser loads the *Sign On* page. Enter your user name and password and click **Sign On**.



Signing On with ePMC Authentication

If you are signing in for the first time, you are required to change your password. Once you are successfully authenticated, you are directed to the BIOVIA LIMS *Home* page.

1 Introduction to BIOVIA Environmental Monitoring

- **Windows Authentication:**

If your system is using Windows Authentication, the “Secondary Sign On Allowed” system setting determines if the *Sign On* screen is displayed.

- **If the “Secondary Sign On Allowed” option is enabled:**

The *Sign On* screen is displayed. Enter your Windows domain and your user name (in the format *domain\user_name*), enter your password, and click **Sign On**.

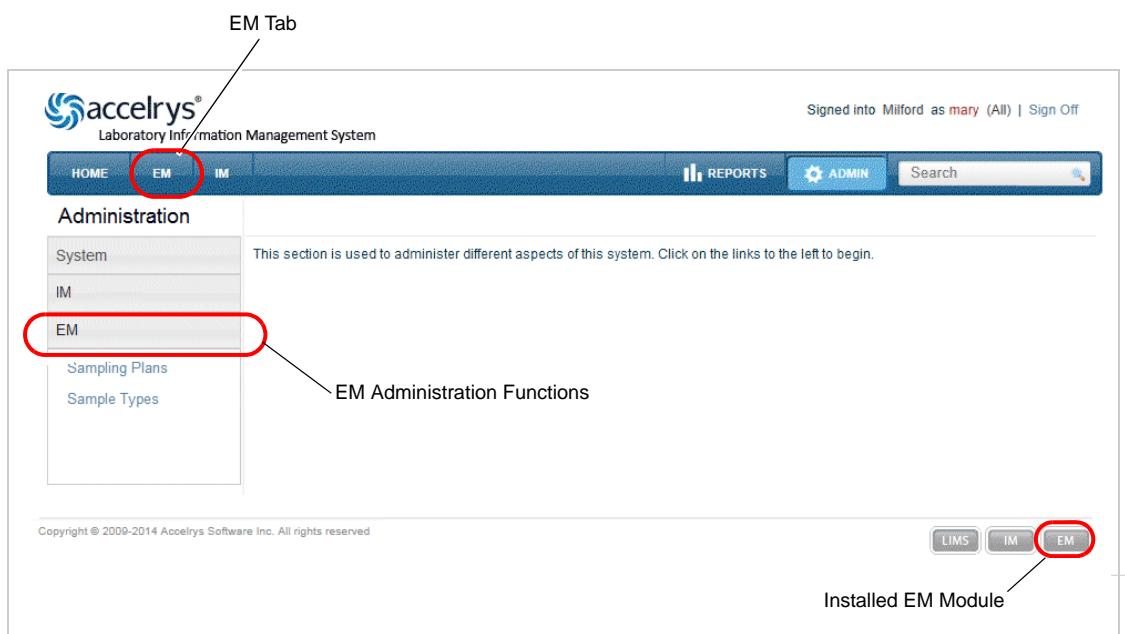
- **If the “Secondary Sign On Allowed” options is disabled:**

The *Sign On* screen is not displayed and you’re immediately directed to the BIOVIA LIMS *Home* page.

Environmental Monitoring Components in the User Interface

When you install the EM module, the main menu bar includes an “EM” tab which displays the *Samples* home page. This is where qualified laboratory personnel can schedule and perform environmental sampling at specified locations in your environment.

In addition, the ADMIN tab contains the “EM” section in the left navigation panel where you can manage the administration functions of the EM module. A small “EM” icon is also displayed in the lower right corner of the page to indicate that the module is installed.



Environmental Monitoring Elements in the User Interface

Environmental Monitoring User Eligibilities

The following table lists the user eligibilities specific to the EM module. To configure a User Role with these eligibilities, refer to the *BIOVIA LIMS System Administration Guide*.

Table 1-2 Environmental Monitoring User Eligibilities

Eligibility	Description
Can View Sampling Plans	Allows user to view only those Sampling Plans in the system whose status is "Active."
Can Administer Sampling Plans	Allows users to view all of the Sampling Plans in the system (all status codes). Allows user to create, edit, and delete Sampling Plans in the system.
Can View Sample Types	Allows users to view only those Sample Types in the system whose status is "Active."
Can Administer Sample Types	Allows users to view all of the Sample Types in the system (all status codes). Allows user to create, clone, edit, and delete Sample Types in the system. Users can also configure the workflow of Sample Types.
Can View Sample Groups	Allows users to view only those Sample Groups in the system whose status is "Active."
Can Administer Sample Groups	Allows users to view all of the Sample Groups in the system (all status codes). Allows users to administer Sample Groups in the system: <ul style="list-style-type: none">• Create new Sample Groups• Edit Sample Groups• Add ad hoc samples to a scheduled Sample Group• Reschedule Sample Groups for a different date• Assign Sample Groups to a specified user• Add other Sampling Plans to a Sample Group
Can Cancel Sample Groups	Allows users to cancel a scheduled Sample Group.
Can Undo Cancelled Sample Groups	Allows users to reinstate a cancelled Sample Group.
Can View Samples	Allows users to view the Samples in the system.
Can Process Samples	Allows users to perform workflow actions on samples in the system.

How Date/Time Values are Recorded in the Module

The *BIOVIA LIMS System Administration Guide* (available on the BIOVIA Download Center) provides a general description of how date/time values are recorded and displayed in the system. This section explains date and time values that are specific to the EM module.

How date/time values are recorded when adding samples to the system

The following model is used:

- 1 The Sample Group trigger is executed every hour and processes those samples that are scheduled for that hour converted to Coordinated Universal Time (UTC).
- 2 The sample's date and time value is based on the time zone in which the Sample Group was created.

Note: This model is also applied when you update the status of a sample.

How date/time values are recorded when adding Sampling Plans to the calendar

The following model is used:

- 1 The date and time values are obtained (as entered by the operator) and are converted to UTC, based on the client time zone offset.
- 2 Sample Groups are added to the calendar (converted to UTC).
- 3 Sample Groups are displayed in the calendar (week or day view) based on the time zone of the client that is viewing them.

How date/time values are recorded for a Time Trigger activity

The current date and time is compared against the target property date/time value (for example, End Incubation Time). The target date/time is converted to UTC.



2

Managing Location Types

What is a Location Type?

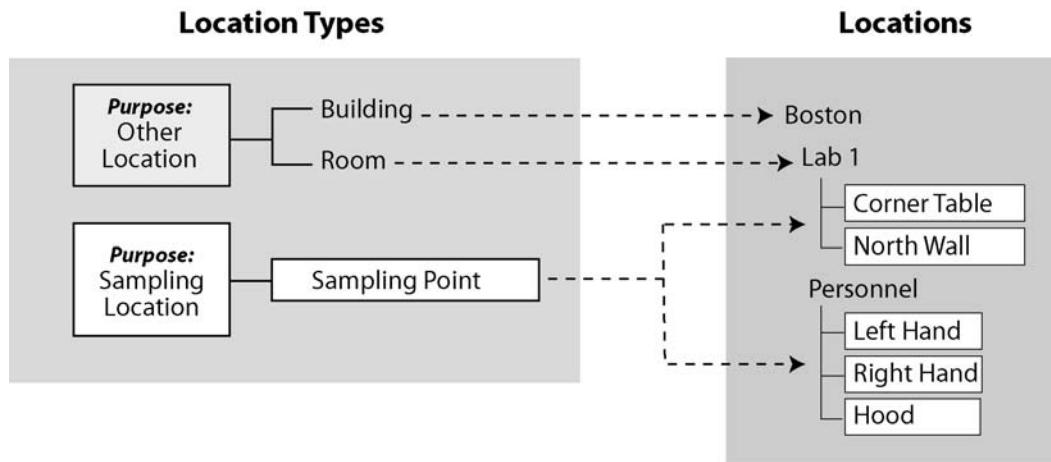
A *Location Type* represents one type of location in the system that is created for a specific purpose. BIOVIA LIMS supports three different Location Types, as described in the following table.

Table 2-1 Available Location Types

Purpose	Available with...	Description
Other Location	BIOVIA LIMS core application	General or physical locations such as a country, a building, or a lab.
Storage Location	BIOVIA Inventory module	Storage locations for Inventory consumables, such as a cabinet, a shelf, or a bin.
Sampling Location	BIOVIA Environmental Monitoring module	Sampling locations for environmental monitoring purposes, for example, a location in a room or on a person.

In the EM module, you will create various Location Types that represent the buildings and rooms in your facility. These will be based on the “Other Location” option. You will also create two other Location Types to represent a sampling point in a room and a sampling point on a person. These will be based on the “Sampling Location” option.

The following figure shows the relationship between Location Types and the Locations on which they are based.



Relationship between Location Types and Locations

A *Location* is one instance of a Location Type. A Location Type is defined by various properties that apply to all of the Locations based on that type. For example, sampling locations based on a Location Type called “Sampling Point” could include a “Classification” selection list property to identify the classification rating of the location. The Sampling Point Location Type could include numeric “Alert Limit” and “Action Limit” properties to identify the alert/action thresholds for that particular sampling location. You will define the values of these properties when you create the actual Locations based on this Location Type (Chapter 3).

Required Eligibility for Managing Location Types

In order to create and manage Location Types, users must belong to a User Role that has the following eligibilities:

- **Can View Location Types**—Allows users to view Location Types and their audit trails.
- **Can Administer Location Types**—Allows users to create and edit Location Types.

Status Codes for Location Types

Status codes represent the current state of a Location Type in the system. A Location Type can reside in one of four states:

- **Draft**—When you create a new Location Type, its status is set to “Draft” by default. It is not available for use in the system until you set its status to “Active.”
- **Active**—The Location Type is available for use in the system—that is, you can create Locations, individual instances of the Location Type. It can also be used by its other dependencies in the system, such as properties and workflow activities.

- **Upgrading**—The Location Type is unavailable for use in the system. However, its associated Locations will use the last “Active” version of this Location Type.
- **Inactive**—The Location Type is unavailable for use. Its associated Locations will not be able to use any version of this Location Type.

The following table summarizes the actions that are allowed at each state.

Table 2-2 Allowed Actions for the States of a Location Type

Action	Status			
	“Draft”	“Active”	“Upgrading”	“Inactive”
Can view Location Types in system	Administrator only ²	All users ¹	Administrator only ²	Administrator only ²
Available to dependencies (for example, Locations, properties, workflow activities)	No	Yes	Last “Active” version	No
Can add properties	Yes ²	Yes ²	Yes ²	Yes ²
Can edit properties	Yes ²	Yes ^{2, 4}	Yes ²	Yes ²
Can delete properties	Yes ²	No	No	No
Can edit definition of Location Type	Yes ²	Yes ²	Yes ²	Yes ²
Can delete Location Type	Yes ²	No	No	No
Can change status to:	Active	Upgrading Inactive	Active ⁵	Active
Versioning enforced for changes	Yes	Yes	Yes	Yes
Reason Code applied to changes	By system	By user	By user	By user
Can export Location Types to other systems	No	Yes ³	No	No

¹ Requires “Can View” eligibility.

² Requires “Can View” and “Can Administer” eligibility.

³ Requires “Can Export” eligibility.

⁴ When properties are edited, status automatically changes to “Upgrading.”

- 5 When you change the status from “Upgrading” to “Active,” all Locations based on this Location Type must be upgraded for the status change to occur. If the upgrade is cancelled, the change of status is also cancelled. A change in status from “Upgrading” to “Active” is not allowed if a property type is changed that is used in an active Sample Type’s workflow.

Viewing Configured Location Types

To view the configured Location Types in the system:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Location Types**. The *Location Types* home page is displayed.

The grid lists all of the Location Types that are registered in the system. Each Location Type is identified by its name, description, purpose, and current status.

The icons in the first column of the grid represent actions that you can perform on the corresponding Location Type. These are determined by your user eligibilities as well as the current status of the Location Type.



Edit—Allows eligible users to edit the corresponding Location Type.



Delete—Allows eligible users to delete the Location Type. This is only available for Location Types whose status is “Draft.”

You can filter the view of the grid as necessary. Refer to the section *How the Grid Control Works* in the *BIOVIA LIMS System Administration Guide*.

	Name ▲	Description	Purpose	Status
	Building		Other Location	Active
	General Location		Other Location	Active
	Sampling Point		Sampling Location	Active

Location Types Home Page

- 3 To view the details of a Location Type, click its name in the grid. The Location Type's View page displays its general information (name, description, current status) as well as its configured properties below.

General Information

Properties

Name	Type	Value	Description	Attributes
Boolean	Boolean (True/False)	True	Boolean (True/False)	Is Required: False
Property	Date	6/6/2020	DateProperty	Is Required: False
DateProperty	Date	6/6/2020	DateProperty	Is Required: False
FileUploadProperty	File Upload	FileUpload.txt	FileUploadProperty	Is Required: False

History Link

Viewing Details of a Location Type

Location Types Properties:

The Location Type's properties are displayed in the Information tab. Some Location Types may have properties grouped into multiple tabs.

- A **Lock** icon in the Type column indicates that the property is being used in a Sample Type's workflow and its property type cannot be changed.
- Click **Edit** to edit the corresponding property.
- Click **Delete** to delete the corresponding property. This is only available for Location Types whose status is "Draft."
- Click **Add Property** to configure a new property.
- Click **Manage Tab** to reorder properties or create new property tabs in order to group similar properties. Refer to *Organizing the Properties of a Location Type* on page 2-14.

- 4 To edit the definition of this Location Type, click **Edit** above the History link. Refer to *Editing a Location Type* on page 2-17.
- 5 To view the audit trails for this Location Type, click the **History** link. Refer to the *BIOVIA LIMS System Administration Guide*.

- 6 To return to the *Location Types* home page, click **Show All Location Types** above the name of the Location Type.

Creating a New Location Type

For an EM installation, you need to create the following Location Types:

- **Other Location**—General locations such as Buildings, Lab, or Rooms.
- **Sampling Location**—Named “Sampling Point”
- **Sampling Location**—Named “Personnel”

To create a new Location Type:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Location Types**.
- 3 In the *Location Types* home page, click **Create Location Type** above the grid.
- 4 In the *Create Location Type* page:
 - a. Enter a name for the Location Type. The name must be unique in the current Site and cannot exceed 100 characters. Note that you can use the same name in a different Site. The uniqueness is not case-sensitive. Blank spaces at the beginning or end of the name are not allowed.
 - b. Enter a description (optional). The description cannot exceed 1000 characters.
 - c. In the Purpose field, select **Other Location** for a building or room, or **Storage Location** for a sampling location.
 - d. Click **Create**.

Create Location Type

<p>What is a Location Type?</p> <p>A Location Type is one type of location used in your environment that is defined by custom properties. You can create specific instances of locations based on location types.</p>	<p>Name</p> <input type="text" value="US Sampling Point"/> <p>Description</p> <input type="text"/> <p>Purpose</p> <input type="text" value="Sampling Location"/> <p>Status</p> <input type="text" value="Draft"/>
<p> Cancel</p>	<p> Create</p>

Creating a New Location Type

The new Location Type's *View* page is displayed with a status of "Draft."

The screenshot shows a software interface for managing location types. At the top, there are navigation tabs: HOME, EM, IM, REPORTS, ADMIN, and a search bar. Below the navigation is a sidebar with links: Start Page, System Settings, Users, User Roles, User Groups, Sites, Location Types (which is selected), Locations, Labels, and Entity Types. The main content area is titled 'General Location' with a description: 'Location Type used for Building, Labs, Rooms, etc.' and a status: 'Draft'. There is a 'Properties' section with a 'Information' tab selected, showing a table with columns: Name, Type, Value, Description, and Attributes. Buttons for 'Add Property' and 'Manage Tabs' are also present.

Location Type's "View" Page

- 5 Configure the properties of this Location Type, as described in the following section *When you are done configuring the Location Type, set its status to "Active" to make it available for use. Refer to Editing a Location Type on page 2-17.* Configuring the Properties of a Location Type.
- 6 When you are done configuring the Location Type, set its status to "Active" to make it available for use. Refer to *Editing a Location Type* on page 2-17.

Configuring the Properties of a Location Type

Each Location Type is defined by one or more properties. The properties describe all of the information specific to that Location Type and apply to all of the Location instances based on that type. You can configure some properties with a default value while other properties will be defined when you create a specific Location.

This section explains how to add a new property for a Location Type and then describes each property type in more detail. To get started, determine what types of properties your Location Type will need.

- For the physical locations (buildings/rooms), these typically include properties such as country, city, address, and lab number.
- For sampling locations, these typically include properties such as Alert Limit, Action Limit, Classification, and Grade.

Adding a new property to a Location Type

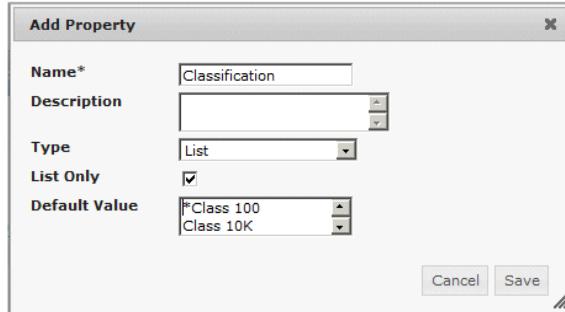
To add a new property to a Location Type, follow these steps:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Location Types**.
- 3 In the *Location Types* home page, click the Location Type whose properties you want to configure.
- 4 In the Location Type's *View* page, click **Add Property**.

The screenshot shows the 'General Location' view for a location type. The left sidebar has a 'System' category with 'Start Page', 'System Settings', 'Users', 'User Roles', 'User Groups', 'Sites', 'Location Types' (which is selected and highlighted in blue), and 'Locations'. The main content area has a title 'General Location' with a description: 'Description: Location Type used for Building, Labs, Rooms, etc.' and 'Status: Draft'. Below this is a 'Properties' section with a table header: 'Name', 'Type', 'Value', 'Description', and 'Attributes'. At the top right of the properties section are 'Delete', 'Edit', and 'History' buttons, and below them are 'Add Property' and 'Manage Tabs' buttons. A red circle highlights the 'Add Property' button.

Adding Properties in Location Type's "View" Page

- 5 In the *Add Property* dialog box:
 - a. Enter a name for the property. You can use duplicate names as long as they are based on a different property type. You cannot use an apostrophe in the property name.
 - b. Enter a description (optional). The description cannot exceed 1000 characters.
 - c. In the Type field, select the type of property from the selection list and set any additional parameters for the selected property type, as required. Refer to *Description of Location Type properties* on page 2-10 for details of each property type.
 - d. Click **Save**.



Configuring Property for Location Types

- 6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Location Types whose status is "Draft."



Reason Code for New Property

Once the change has been committed, the new property is listed in the Location Type's *View* page.

Note: If you added the property while the status of the Location Type is "Active," the system will automatically set its status to "Upgrading." Its dependencies in the system (that is, Locations) will use the last active version of this Location Type.

- 7 To create additional properties, repeat Steps 5-6.

The screenshot shows a software interface for managing location types. At the top, it says "General Location" with a "History" link. Below that, a description states "Description: Location Type used for Building, Labs, Rooms, etc." and "Status: Draft". A "Properties" section is open, with tabs for "Information" and "Add Property". There is a "Manage Tabs" button. A table lists a single property: "Name" (Text type) with value "Name". To the right of the table are "Attributes" columns: "Max Length: Blank", "Blank", and "Min Length: Blank". There is also a trash can icon.

Creating a New Property

Description of Location Type properties

This section describes the available property types for Location Types:

- Boolean (True/False)
- Date
- File Upload
- Link
- List
- Numeric
- Text
- Text (Multiple lines)

Boolean (True/False) property

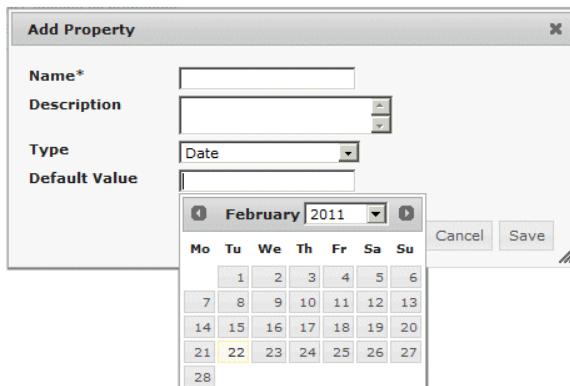
The **Boolean (True/False)** property defines a property based on a boolean “True” or “False” value. When users create a Location based on this Location Type, they can set the property to one of these values. For example, a Boolean property can be used to specify whether a building is owned (true) or leased (false).

The dialog box is titled "Edit Boolean". It has fields for "Name*" (with an empty input field), "Description" (with an empty input field), "Type" (set to "Boolean (True/False)" with a dropdown arrow), and "Default Value" (set to "True" with a dropdown arrow). At the bottom are "Cancel" and "Update" buttons.

“Boolean (True/False)” Property

Date property

The **Date** property includes a text field with a date picker control. You can specify a default date or leave it blank. When users create a Location based on this Location Type, they can keep the default date if it is specified or select a new one. For example, a Date property can be used to indicate the next inspection date of a lab.

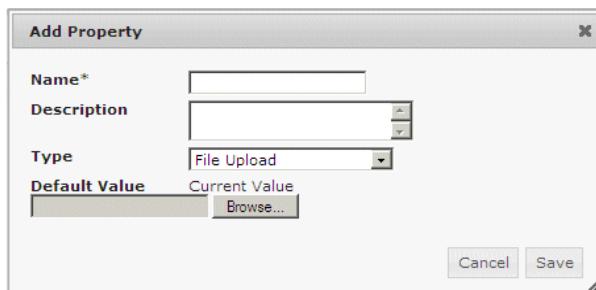


"Date" Property

File Upload property

The **File Upload** property associates an external file to a Location Type. The **File Upload** property includes a Browse button that allows you to browse to the network and upload a file of your choice. You can specify a default file or leave it blank. When users create a Location based on this Location Type, they can keep the default file or browse to a new one. For example, a File Upload property can be used to include a floor plan of a laboratory.

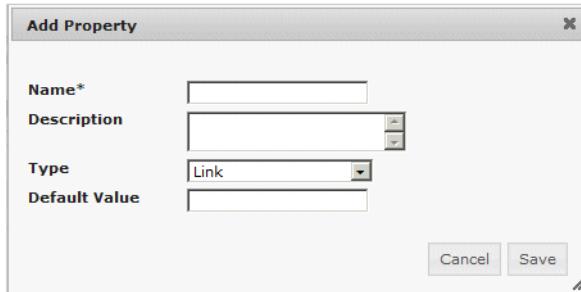
Note that in order to print barcodes labels for samples, the sampling Location Type must have a File Upload property. Also, "Barcode label" and "Barcode Group" are reserved property names that are used for creating labels for sampling plates. Refer to Chapter 7, *Creating Barcode Labels for Sampling Plates*.



"File Upload" Property

Link property

The **Link** property allows you to include a link that will be rendered as a hyperlink to a specified URL. If you enter a default, it must include the “http” or “https” protocol and the “www” domain name.

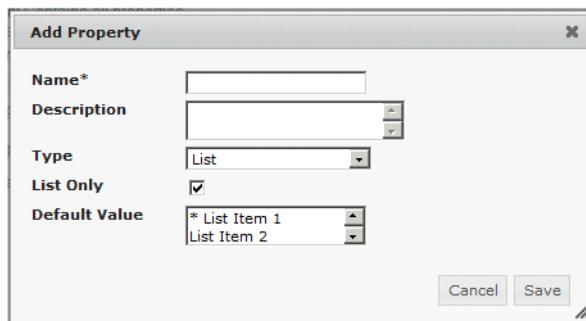


“Link” Property

List property

The **List** property allows the user to select a property value from a predefined list when creating or editing a Location. To indicate the default list item, precede it with an asterisk (*). The **List Only** check box determines if new list items can be added to the list. If checked, users can only select a value from the list when they create a Location. If List Only is not checked, they can enter a new value.

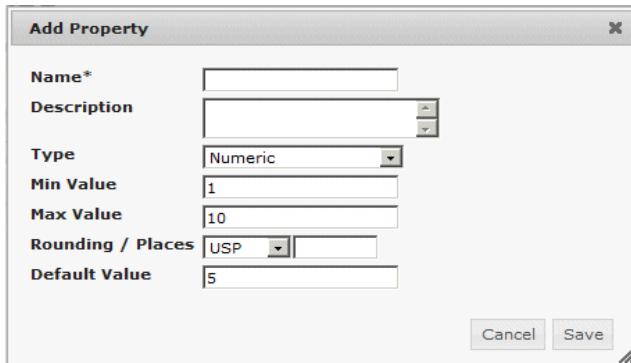
For example, you could use a List property to display a selection list with the classification rating of a sampling location (for example, Class 100, Class 100K, Class 10K).



“List” Property

Numeric property

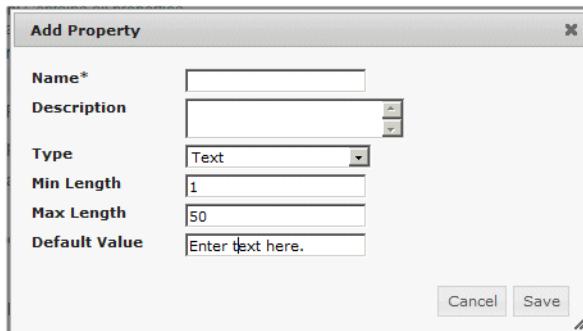
The **Numeric** property allows users to specify a numeric value for a Location's property. You can specify a minimum and/or maximum value, as well as a default value. For example, you could use a Numeric property to specify the Alert and Action Limits for a sampling location.



"Numeric" Property

Text property

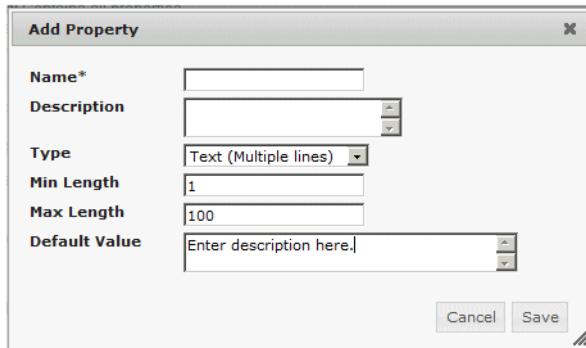
The **Text** property allows users to enter a single line of text when they create Locations based on this Location Type. You can specify a minimum and maximum character length, as well as a default value. For example, a Text property can be used to specify the name of the location (for example, Microbiology Lab).



"Text" Property

Text (Multiple Lines) property

The **Text (Multiple Lines)** property allows users to enter multiple lines of text when they create Locations based on this Location Type. You can specify a minimum and maximum character length as well as a default value. For example, a Text (Multiple Lines) property can be used to specify the address of a location.



"Text (Multiple Lines)" Property

Organizing the Properties of a Location Type

You can organize the properties of a Location Type in the following ways:

- Reorder the properties in a single tab. The order of the Location Type properties determines the order in which they are displayed to the user during workflow execution.
- Create new tabs in order to group properties into meaningful categories. By default, a Location Type's *View* page displays the properties under the default "Information" tab. If your Location Type has a large number of properties, you can add additional tabs to move the properties into logical groupings.
- Copy existing properties into a new tab.

To organize the Location Type properties:

- 1 On the Location Type' *View* page, click **Manage Tabs** above the list of properties.
- 2 Perform one of the following functions:
 - **Reordering Properties**—To reorder properties on a single tab, drag and drop the selected property to a new location in the list.

The screenshot shows the 'General Location' properties screen. At the top right are 'Add Property' and 'Manage Tabs' buttons, with 'Manage Tabs' circled in red. Below is a table of properties:

Name	Type	Value	Description	Attributes
Name	Text			Max Length: Blank Min Length: Blank
Description	Text (Multiple lines)			Max Length: Blank Min Length: Blank
Image	File Upload			Max Length: Blank Min Length: Blank
Address	Text (Multiple lines)			Max Length: Blank Min Length: Blank
Image	File Upload			

A modal dialog titled 'Properties' is open over the table, also with 'Manage Tabs' circled in red. It lists the same properties with their types and attributes. A dashed arrow points from the 'Manage Tabs' button on the main screen to the 'Manage Tabs' button in the modal.

Reordering Location Type Properties

- **Creating New Tabs**—To create a new property tab:
 - a. Click **Add** to the right of the Information tab.

2 Managing Location Types

The screenshot shows the 'General Location' properties screen. At the top right, there are 'Add Property' and 'Manage Tabs' buttons. The 'Manage Tabs' button is circled in red. Below it, there is a table for managing properties. A modal window titled 'Properties' is open, showing tabs for 'Information' and 'IMAGES'. The 'IMAGES' tab is selected and has a green plus sign icon. Another modal window titled 'Properties' is also visible, showing tabs for 'Information' and 'IMAGES'.

Adding a New Property Tab

- b. Enter a name for the tab. The name must be unique and cannot exceed 24 characters.
- **Editing/Deleting Tabs**—To edit the tab name or delete the tab, click **Edit** on the new tab or **Delete** to delete the tab. Note that you cannot delete a tab if it contains any properties.

The screenshot shows the 'Properties' screen with a tab labeled 'IMAGES'. The 'Edit' icon (pencil) and 'Delete' icon (red X) next to the 'IMAGES' tab are circled in red. Below the tabs, there is a table for managing properties.

Editing/Deleting a Property Tab

- To change the order of the tabs, drag and drop the selected tab to the new position.
- To copy properties into a different group, drag and drop the selected property into a different tab. A property can exist in one group only.

- 3 When you are done, click **Save Changes**.
- 4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Location Types whose status is “Draft.”

Editing a Location Type

You can edit the definition of a Location Type as well as its properties.

- Samples created before the change will remain based on the older version of the Location Type.
- Samples created after the change will reflect the updated Location Type information.

Editing the definition of a Location Type

When you edit the properties of an “Active” Location Type, the status automatically changes to “Upgrading.” When you set the status back to “Active,” you can automatically upgrade the associated Locations in order to keep them synchronized with their associated Location Type.

To edit the definition of a Location Type:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Location Types**.
- 3 In the *Location Types* home page, do one of the following:
 - Click **Edit**  preceding the Location Type’s name.
 - Click the name of the Location Type to open its *View* page and click **Edit**.
- 4 In the *Edit Location Type* page:
 - a. Change the name and description fields, as necessary.

Edit US Sampling Point

What is a Location Type? A Location Type is one type of location used in your environment that is defined by custom properties. You can create specific instances of locations based on location types.	Name <input type="text" value="US Sampling Point"/>
	Description <input type="text"/>
	Purpose Sampling Location
	Status <input type="text" value="Active"/>

 Cancel Update

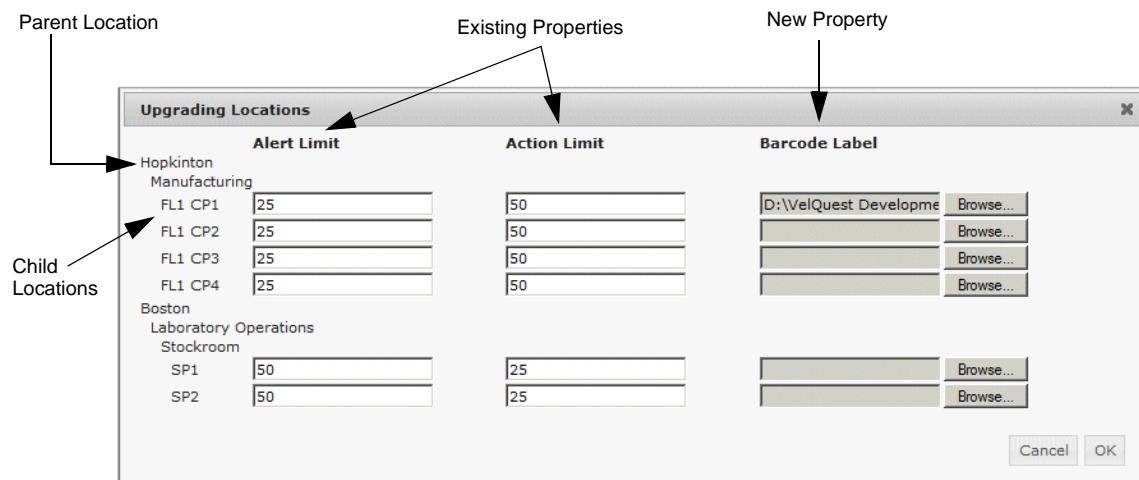
Editing the Definition of a Location Type

- b. When you change the status from “Upgrading” to “Active,” a check box is displayed that indicates the number of existing Locations based on this Location Type.
 - **Checked**—The associated Locations will be automatically updated and their property values will be synchronized to the latest version of the parent Location Type.
 - **Unchecked**—You must manually update the associated Locations to the latest version of the parent Location Type in the *Update Locations* page.

5 Click **Update.**

- If there are no Locations based on this type or if you checked the Automatic Upgrade check box, continue to Step 7.
- If there are existing Locations based on this type and you left the Automatic Upgrade check box blank, the *Upgrading Locations* dialog box is displayed. You must manually upgrade the Locations to keep them synchronized with their associated Location Type.

If you added a new property to this Location Type, it is displayed with its default value or is blank if no default was defined. For example, in , a Barcode Label property was added that applies to all of the child Locations based on this Location Type. Change or reconfigure any of the existing property values, as necessary.



Upgrading Existing Locations

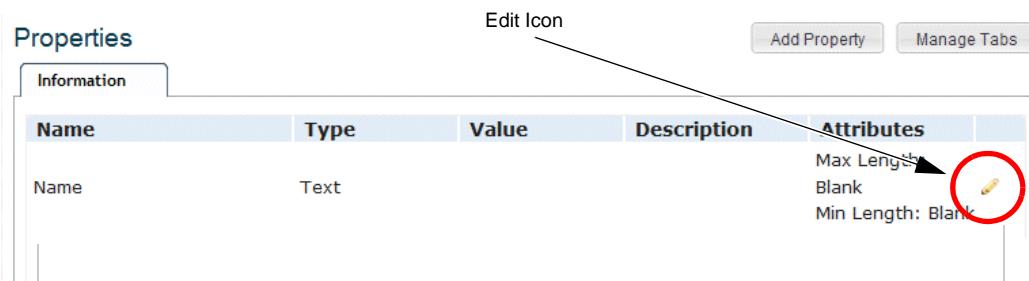
- 6 Click **OK**. Note that if you cancel, you will not be able to set the status of this Location Type to “Active” until you have upgraded its associated locations.**

- 7 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Location Types whose status is "Draft."

Editing the properties of a Location Type

To edit a property of a Location Type:

- 1 In the *Location Types* home page, click the name of the Location Type whose properties you want to edit.
- 2 In the Location Type's *View* page, click **Edit**  to the right of the property you want to edit.

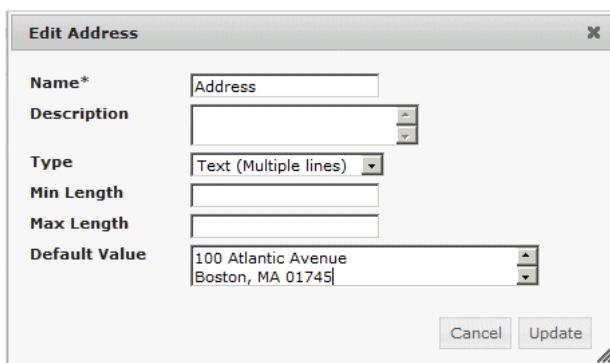


Name	Type	Value	Description	Attributes
Name	Text			Max Length: <input type="text"/> Blank: <input checked="" type="checkbox"/> Min Length: <input type="text"/>

Editing Properties of Location Types

- 3 In the *Edit <Property>* dialog box, edit the property as necessary.

Note: A Lock icon  preceding the Type list indicates that this property is currently being used in a workflow and its property type cannot be changed.



Editing a Property of a Location Type

- 4 Click **Update**.

- 5 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Location Types whose status is “Draft.”
The updated properties will be displayed in the Location Type’s *View* page.
- 6 **Note:** If the status of the Location Type is currently “Active,” the system automatically changed its status to “Upgrading” and you will need to make it active again in order for it to be available for use in the system.

Deleting the properties of a Location Type

You can only delete a property of a Location Type whose status is “Draft.”

To delete a property of a Location Type:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Location Types**.
- 3 In the *Location Types* home page, click the name of the Location Type whose property you want to delete.
- 4 In the Location Type’s *View* page, click **Delete**  to the right of the property.
- 5 In the *Confirmation* dialog box, click **OK** to delete the property.

Upgrading a Location Type

When you edit the properties of an “Active” Location Type, its status automatically changes to “Upgrading.” You can also manually set the status to “Upgrading” prior to making your edits. Its associated Locations will use the last “Active” version of this Location Type. To change the status, refer to *Editing a Location Type* on page 2-17.

Inactivating a Location Type

To make a Location Type unavailable for use in the system, set its status to “Inactive.” Its associated Locations will not be able to use any version of this Location Type. To change the status, refer to *Editing a Location Type* on page 2-17.

Deleting a Location Type

You can only delete a Location Type whose status is “Draft.”

To delete a draft Location Type from the system:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Location Types**.

- 3 In the *Location Types* home page, do one of the following:
 - Click **Delete**  preceding the Location Type name.
 - Click the name of the Location Type to open its *View* page and click **Delete**.
- 4 In the *Confirmation* dialog box, click **OK** to delete the Location Type.

Exporting Configured Location Types to Other Systems

Once you have finished configuring your Location Types, you can export them to an XML file so you can import and deploy them on other systems. Refer to the *BIOVIA LIMS System Administration Guide*.

What's Next?

Chapter 3 explains how to create Locations based on the Location Types you configured in this chapter.

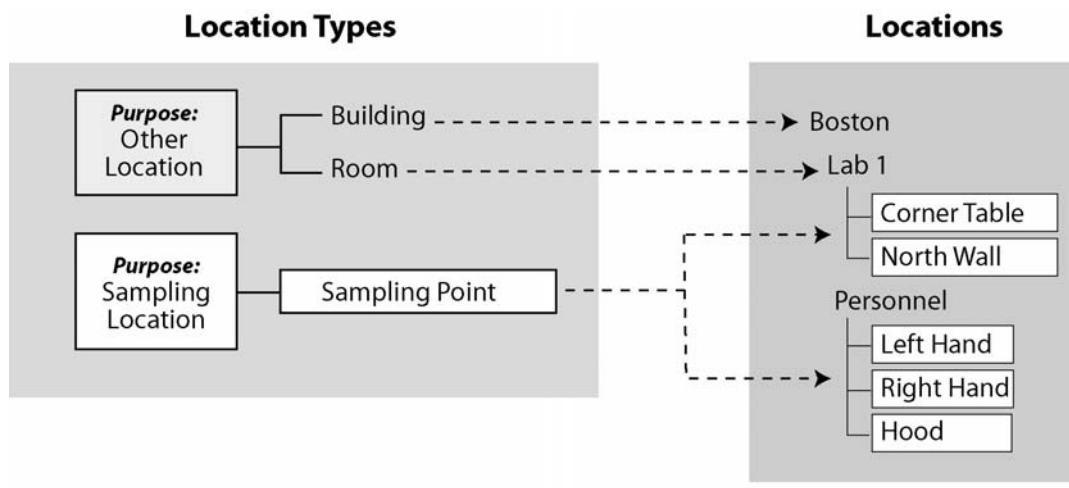
--- Blank Page ---

Managing Locations

What is a Location?

A *Location* represents one instance of a Location Type. Locations are based on a hierarchy of different types of locations in your environment. The top-level Location typically represents your main facility or building. Child Locations often represent the rooms or labs in your building, and their nested child Locations represent the actual storage locations in each.

The following figure shows the relationship between Location Types and their associated Locations.



Relationship between Location Types and Locations

Required Eligibility for Managing Locations

In order to create and manage Locations, users must belong to a User Role that has the following eligibilities:

- **Can View Locations**—Allows users to view Locations and their audit trails.
- **Can Administer Locations**—Allows users to create and edit Locations.

Status Codes for Locations

Status codes represent the current state of each Location in the system. A Location can reside in one of three states:

- **Draft**—When you create a new Location, its status is set to “Draft” by default. It is not available for use in the system until you set its status to “Active.”
- **Active**—The Location is available for use in the system. Note that you cannot set the status of a child Location to “Active” if the status of any of its parent Locations is “Draft.” While you are editing an active Location, its dependencies will use its last “Active” version.
- **Inactive**—The Location is unavailable to users and other dependencies. The existing dependencies cannot use any version of the Location.

The following table summarizes the actions that are allowed at each state.

Table 3-1 Allowed Actions for the States of a Location

Action	Status		
	“Draft”	“Active”	“Inactive”
Can view Locations in system	Administrator only ²	All users ¹	Administrator only ²
Available to dependencies (for example, properties, workflow activities)	No	Last “Active” version	No
Can add new Locations	Yes ²	Yes ²	Yes ²
Can edit Locations	Yes ²	Yes ²	Yes ²
Can delete Locations	Yes ²	No	No
Can change status to:	Active	Inactive	Active

Table 3-1 Allowed Actions for the States of a Location (continued)

Action	Status		
	“Draft”	“Active”	“Inactive”
Versioning enforced for changes	Yes	Yes	Yes
Reason Code applied to changes	By system	By user	By user
Can export Locations to other systems	No	Yes ³	No

¹ Requires “Can View” eligibility.

² Requires “Can View” and “Can Administer” eligibility.

³ Requires “Can Export” eligibility.

Viewing Configured Locations

In the *Locations* home page, the top-level or root Locations in the system are displayed in a hierarchical tree structure that represents the configured locations in a logical manner. The root Locations are the highest node in the tree and typically represent the general or physical structures in your environment such as a country, a building, or a room. You can expand the root Locations to display the nested child Locations below them—for example, rooms within a building. Each child Location can also be expanded to display its own child Locations, such as storage locations within a room.

To view the Locations configured in the system:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Locations**.
- 3 In the *Locations* home page, expand each level to locate the location you want to view.

3 Managing Locations

The screenshot shows the 'Administration' interface with the 'Locations' menu item highlighted by a red oval. On the right, a tree view of locations under 'Boston' is displayed. The root location is 'Boston', which has several child locations under 'Manufacturing': 'FL1 CP1', 'FL1 CP2', 'FL1 CP3', 'FL1 CP4', 'FL2 CP5', and 'FL2 CP6'. There are also other categories like 'Laboratory Operations', 'Personnel Sampling', and 'General Location' with their respective sub-items. A bracket labeled 'Root Location' points to 'Boston', and another bracket labeled 'Child Locations' points to the manufacturing sub-items.

"Locations" Home Page

When you click the name of a Location, its description and properties are displayed in the blue panel to the right. The Location menu provides actions that you can perform on that Location.

This screenshot shows the 'Administration' interface with the 'Locations' menu item highlighted. A callout arrow labeled 'Location Menu' points to the context menu for 'FL1 CP1', which includes options like 'View Details', 'Edit', 'Add Child Locations', and 'Close'. Another callout arrow labeled 'Location's Properties' points to the detailed view of 'FL1 CP1' on the right. This view includes information such as 'Sampling Point', 'Active', 'Sampling Location', 'Sample Type: Contact Plate', 'Alert Limit: 25', 'Action Limit: 50', 'Image: Building Schematic.jpg', and 'Barcode Label: Location Label.doc'. It also features a floor plan diagram of a building with various rooms and sampling points marked.

Selecting a Location

- 4 Select **View Details** from the menu. The Location's *View* page is displayed.

Details of Location

Properties

IM REPORTS ADMIN Search Edit History Link

Name: FL1 CP1
Status: Active
Location Type: Sampling Point

Name	Type	Value	Description
Alert Limit	Numeric	25	
Action Limit	Text	50	
Image	File Upload	Building Schematic.jpg	
Barcode Label	File Upload	Location Label.doc	

History

Location's "View" Page

The name, current status, and Location Type on which this Location is based are listed in the upper left corner of the page. The properties and their current values are listed below.

The command buttons in the upper right corner of the page are displayed according to the current status of the Location. Eligible users will be able to:

- Delete the Location if its status is “Draft”
- Edit the definition and properties of the Location. Refer to *Editing Locations* on page 3-9.

To view the audit trails for this Location, click the **History** link. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.

To return to the *Locations* home page, click the **Show All Locations** link above the name.

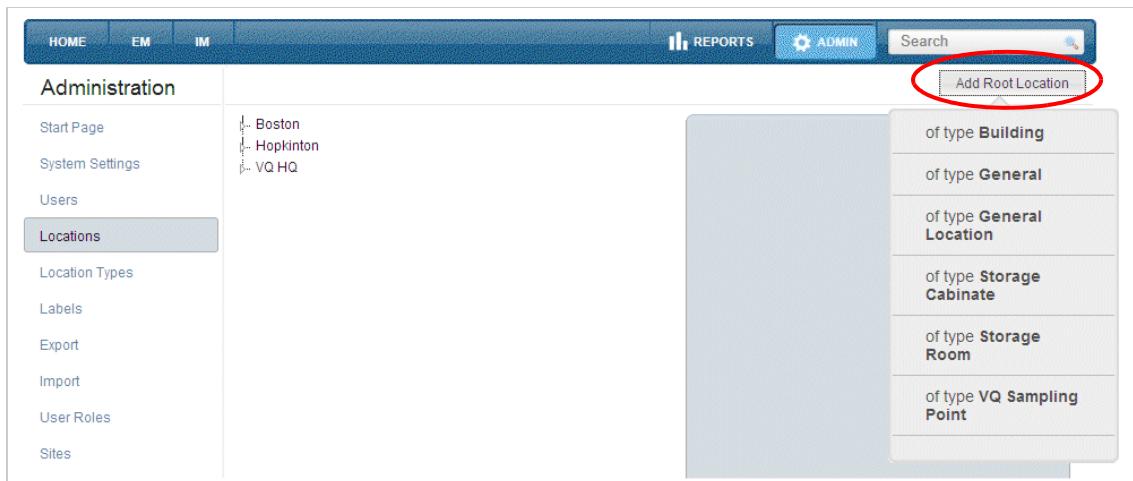
Creating a Root Location

You can add one or more root Locations for the top level entities in your location hierarchy. There is no limit to the number of the root Locations you can create in the system.

To add one or more root Locations:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Locations**.
- 3 In the *Locations* home page, click **Add Root Location** in the upper right corner of the page and select the appropriate type of location. The menu displays all of the active Location Types in the system.

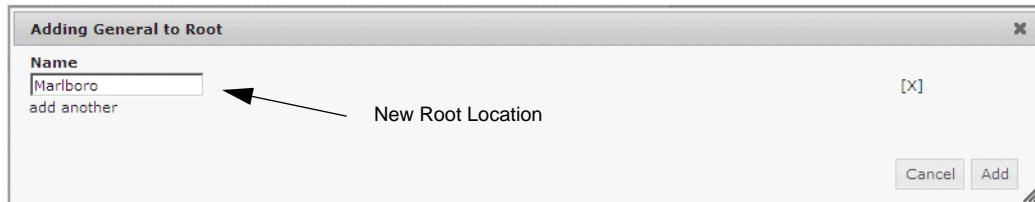
3 Managing Locations



Adding a Root Location

- 4 In the *Add Locations* dialog, enter the name of the new root location.

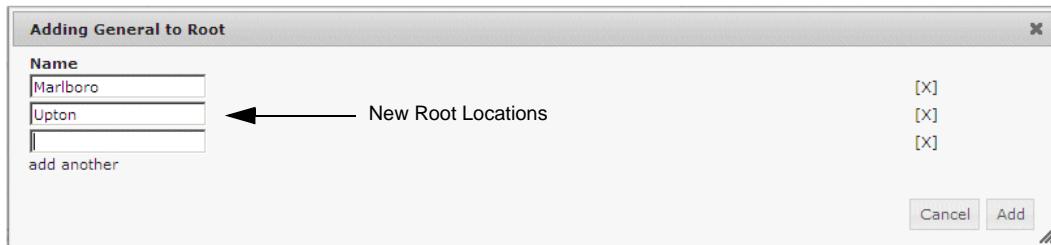
Note: You cannot use a right angle bracket (>) in a name because the system would interpret this as an additional location level.



Defining a Root Location

- 5 To add or remove additional root locations.

- Click the **Add another** link below name.
- To delete a row, click **[X]** to the right of the row.



Adding Multiple Root Locations

6 When you are done, click **Add**.

The new root locations are created with a status of “Draft” and are displayed at the top level of the *Locations* home page.

The screenshot shows the BIOVIA Environmental Monitoring System Administration interface. The main menu bar includes HOME, EM, IM, REPORTS, ADMIN, and Search. On the left, a navigation panel has "Start Page" selected. Under "Locations", "Upton" is highlighted with a red circle. An arrow points from this location to a detailed view on the right. This view shows "Upton" with sub-options "General", "Draft", and "Other Location".

New Root Locations in “Locations” Home Page

The next section explains how to add child Locations to each root Location. Once you are done, set the status of the root Locations to “Active” to make them (and all of their child Locations) available for use in the system. Refer to *Editing Locations* on page 3-9.

Creating a Child Location

You can create one or more child Locations for a root Location or any child Locations. When you create a batch of Locations for a specific parent Location, they are all based on the same Location Type. There is no limit to the number or levels of child Locations you can add within a parent Location.

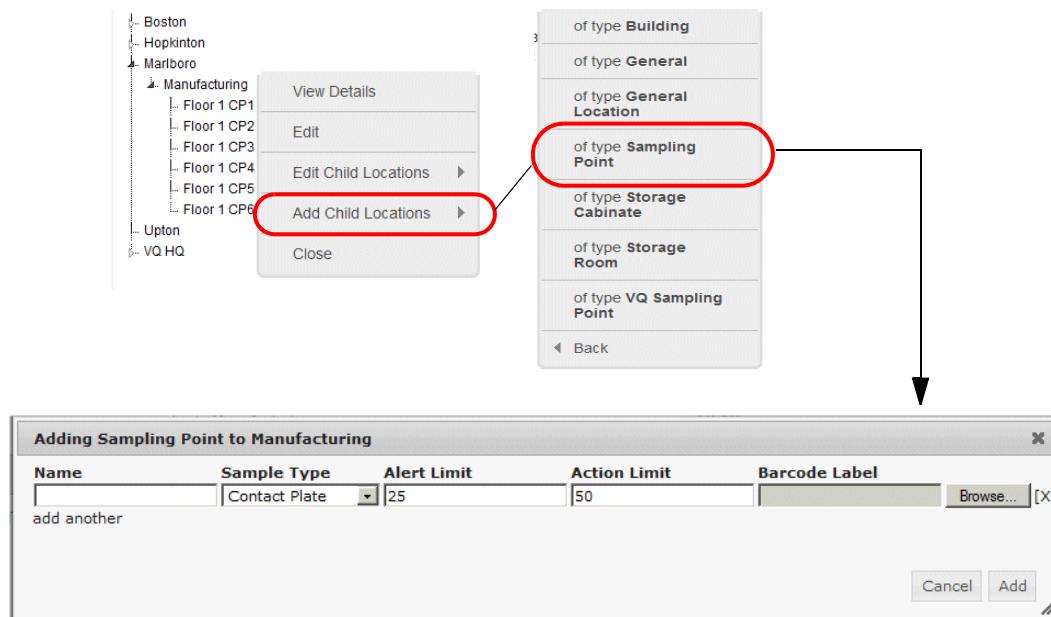
To create one or more child Locations:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Locations**.

3 Managing Locations

- 3 In the *Locations* home page, click the name of the parent Location, select **Add Child Locations** from the menu, and then select the Location Type on which they will be based.
- 4 In the *Adding Locations* dialog, enter the name of the new child Location and configure its properties as necessary. The available properties in each column are based on the Location Type associated with this Location.

Note: You cannot use a right angle bracket (>) in a name because the system would interpret this as an additional location level.



Adding a Single Child Location

- 5 Add/remove additional locations as necessary:
 - Click the **Add another** link below the row(s). The new Location will be configured with the same values as the previous Location. Change these values as necessary.
 - To delete a row, click **[X]** to the right of the row.

Name	Sample Type	Alert Limit	Action Limit	Barcode Label
Floor 1 CP4	Contact Plate	25	50	<input type="button" value="Browse... [X]"/>
Floor 1 CP5	Contact Plate	25	50	<input type="button" value="Browse... [X]"/>
Floor 1 CP6	Contact Plate	25	50	<input type="button" value="Browse... [X]"/>

add another

Cancel Add

Adding Multiple Child Locations

- 6 When you are done, click **Add**. The new child locations are created with a status of “Draft” and are displayed directly under their parent location in the *Locations* home page.
- 7 Set the status of the locations to “Active” to make them available for use in the system. Refer to the following section.

Editing Locations

The system allows you to edit one or more Locations at the same time. When editing a Location, note the following:

- You cannot change the Location’s associated Location Type.
- You cannot change the name of a Location if there is an existing Location with the same name at the same level in its parent Location.
- When you change the status of a parent Location, you have the option to apply the status change to all of its child Locations.
- You cannot change the status of a Location if any of its parent Locations have a status of “Draft.”
- If a Location is renamed, the corresponding samples will have to be manually updated (that is, checked out, select updated Location, checked in).

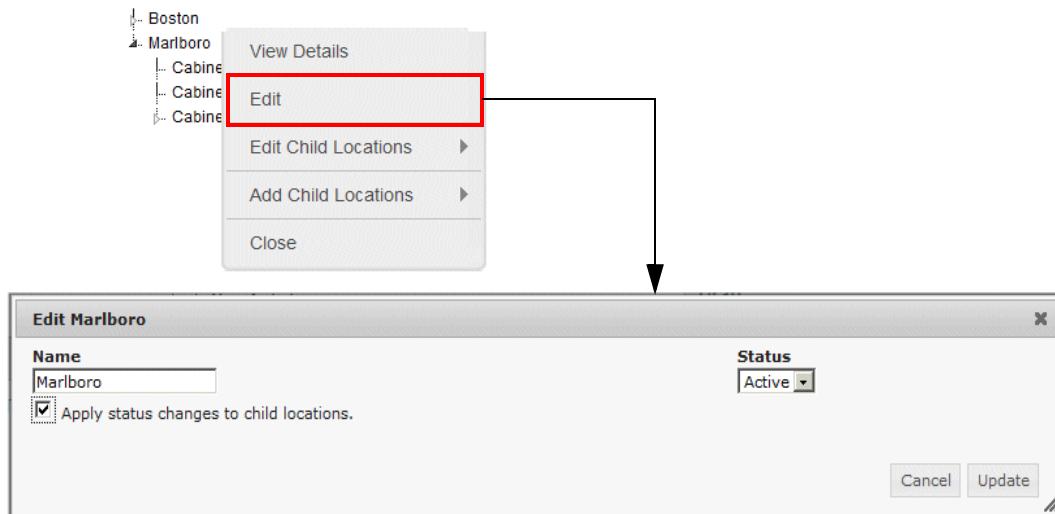
Editing a single location

To edit a root Location or a single child Location:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Locations**.
- 3 In the *Locations* home page, click the name of the root or child Location and select **Edit** from the menu.

3

Managing Locations



Editing a Single Location

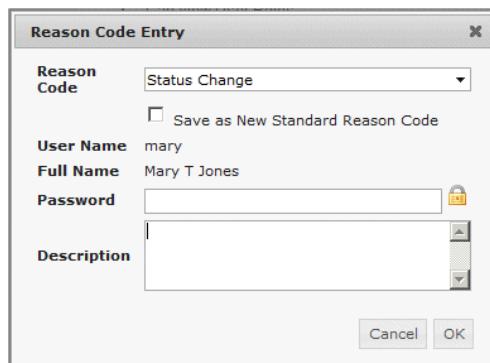
- 4 In the *Edit Location* dialog, change any of the configured properties of the location as necessary.

Note: You cannot use a right angle bracket (>) in a name because the system would interpret this as an additional location level.

- 5 The check box **Apply status changes to child locations** pertains to parent Locations that contains child Locations, thus it is not applicable to storage locations. Enable the check box if you want the child Locations to inherit the status change of the parent Location you are editing. The following table describes the effect of applying the status changes to the child locations.

If status of parent Location is...	and you change its status to...	Effect on Child Locations
Draft	Active	"Draft" and "Inactive" child Locations are set to "Active" and can be used in the system.
Active	Inactive	"Draft" child Locations do not change. "Active" child Locations are set to "Inactive" and cannot be used in the system.
Inactive	Active	"Draft" and "Inactive" child Locations are set to "Active" and can be used in the system.

- 6 When you are done, click **Update**.
- 7 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Locations whose status is "Draft."



Reason Code for Status Change

Editing multiple child locations

To edit a batch of child Locations:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Locations**.
- 3 In the *Locations* home page, click the name of the parent Location and select **Edit Child Locations** from the menu.

- 4 In the *Edit Locations* dialog, change any of the configured properties for the Locations as necessary. Note the following:
- You cannot change the status of a child Location to “Active” if the parent Location has a status of “Draft.”
 - You cannot use a right angle bracket (>) in a name because the system would interpret this as an additional location level.

Name	Status	Sample Type	Alert Limit	Action Limit	Barcode Label
Floor 1 CP1	Active	Contact Plate	25	50	
Floor 1 CP2	Active	Contact Plate	25	50	
Floor 1 CP3	Active	Contact Plate	25	50	
Floor 1 CP4	Active	Contact Plate	25	50	
Floor 1 CP5	Active	Contact Plate	25	50	
Floor 1 CP6	Active	Contact Plate	25	50	

Editing a Batch of Locations

- 5 When you are done, click **Update**.
- 6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Locations whose status is “Draft.”

Inactivating a Location

To make a Location permanently unavailable for use in the system, set its status to “Inactive.” Its dependencies in the system will not be able to use this Location. Refer to *Editing Locations* on page 3-9.

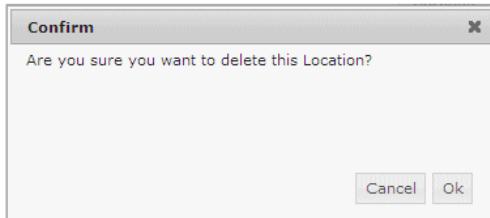
Deleting a Location

You can only delete a Location if its status is “Draft.” When you delete a Location, all of its child Locations are also deleted.

To delete a Location:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the System section heading in the left navigation panel, click **Locations**.
- 3 In the *Locations* home page, click the Location you wish to delete and select **Delete** from the menu.

- 4 In the *Confirmation* dialog, click OK to delete the Location.



Deleting a “Draft” Location

Exporting Configured Locations to Other Systems

Once you have configured the Locations in your environment, you can export them to an XML file so you can import and deploy them on other systems. Refer to the *BIOVIA LIMS System Administration Guide*.

What's Next?

Chapter 4 explains how to create Sample Types for each type of sampling that you use.

--- Blank Page ---

Managing Sample Types

What is a Sample Type?

A *Sample Type* represents one type of sampling done in your environment—for example, a contact plate, a settling plate, or an air sample. You need to create one *Sample Type* for each type of sampling method you use.

A Sample Type is defined by various properties that apply to all samples based on that type. For example, all of the samples based on a Sample Type of “Settling Plate” have a common “Plate Down” property to collect the time the plate was put down, and a “Plate Up” property to collect the time the plate was picked up. Some properties will be fixed, while others will be entered either by the scheduler, the user doing the actual sampling, or as a result of a workflow action or activity.

The following figure shows an example of Sample Types and their properties.

Sample Types

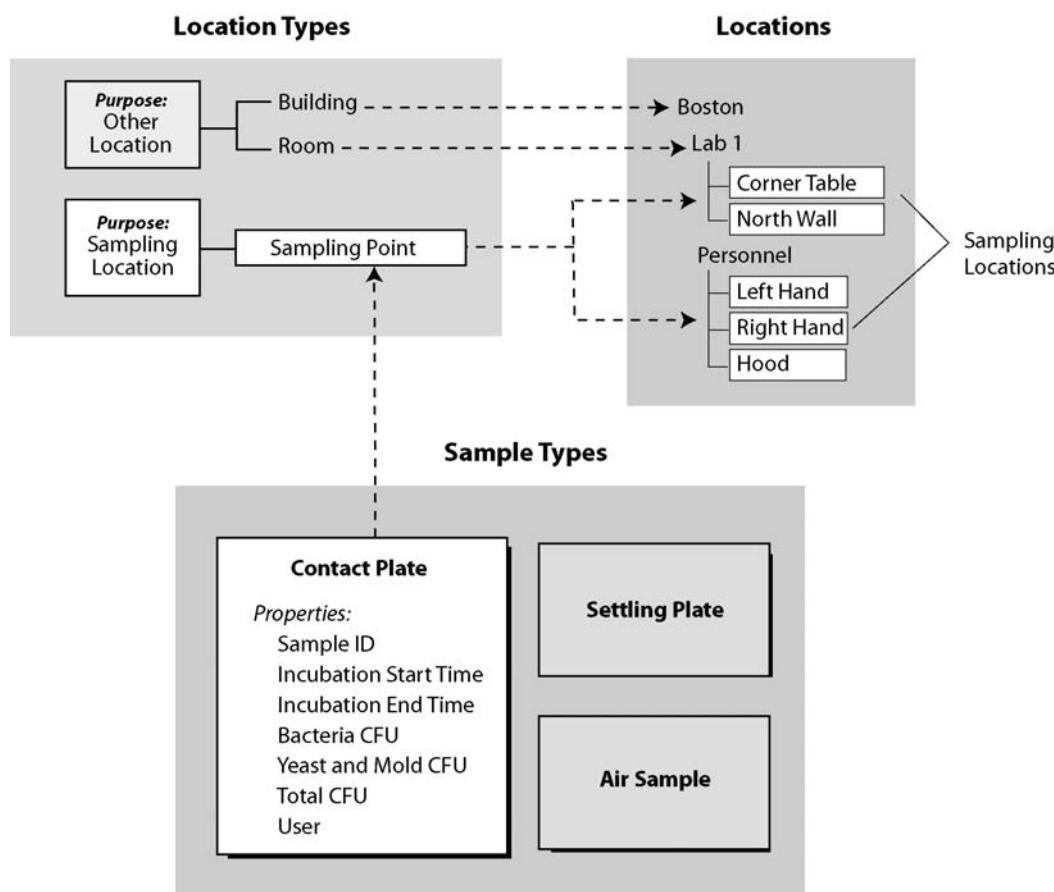
Contact Plate	Settling Plate	Air Sample
<p><i>Properties:</i></p> <p>Sample ID Incubation Start Time Incubation End Time Bacteria CFU Yeast and Mold CFU Total CFU User</p>	<p><i>Properties:</i></p> <p>Sample ID Plates Down Plates Up Incubation Start Time Incubation End Time Bacteria CFU Yeast and Mold CFU Total CFU User</p>	<p><i>Properties:</i></p> <p>Sample ID CF/M PPM Total CFU Organism (A, B, C, D)</p>

Sample Types and their Properties

In addition to its properties, a Sample Type has a defined *workflow* that determines the life cycle of the samples based on this type. The workflow defines the different states in which a sample can reside—from the beginning of its life cycle when it is scheduled, to the end of its life cycle when it is approved.

When you create a new Sample Type, it contains a default workflow with three states—Scheduled, Sampled, and Approved. You can edit the default workflow as necessary for your particular Sample Type. Chapter 5 explains how to configure a workflow for a Sample Type. When you create a Sample Types, you will also associate it with specific sampling locations to indicate what type of sampling will be performed on that location.

The following figure shows the relationship between a Location Type called “Sampling Point,” its associated Sample Type (Contact Plate), and the actual sampling locations that will be sampled using a contact plate.



Relationship between Location Types, Sample Types, and Locations

Required Eligibility for Managing Sample Types

In order to create and manage Sample Types, users must belong to a User Role that has the following eligibilities:

- **Can View Sample Types**—Allows users to view Sample Types and their audit trails.
- **Can Administer Sample Types**—Allows users to create and edit Sample Types.

Status Codes for Sample Types

Status codes represent the current state of a Sample Type in the system. A Sample Type can reside in one of four states:

- **Draft**—When you create a new Sample Type, its status is set to “Draft” by default. It is not available for use in the system until you set its status to “Active.”
- **Active**—The Sample Type is available for use in the system. It can be associated with a sampling location and used by its dependencies in the system, such as samples.
- **Upgrading**—The “Upgrading” status for Sample Types allows you to be able to group or filter the grid in the *Sample Types* home page based on this status.
- **Inactive**—The Sample Type is indefinitely unavailable for use. Its dependencies cannot use any version of this Sample Type.

The following table summarizes the actions that you can perform at each state.

Table 4-1 Allowed Actions at each State of a Sample Type

Action	Status			
	“Draft”	“Active”	“Upgrading”	“Inactive”
Can view Sample Types in system	Administrator only ²	All users ¹	Administrator only ²	Administrator only ²
Available to dependencies (for example, Sample Groups, Sampling Locations)	No	Yes	No	No
Can add properties	Yes ²	Yes ²	Yes ²	Yes ²
Can edit properties	Yes ²	Yes ²	Yes ²	Yes ²
Can delete properties	Yes ²	No	No	No
Can clone Sample Types	Yes ²	Yes ²	Yes ²	Yes ²

Table 4-1 Allowed Actions at each State of a Sample Type

Action	Status			
	“Draft”	“Active”	“Upgrading”	“Inactive”
Can edit definition of Sample Types	Yes ²	Yes ²	Yes ²	Yes ²
Can delete Sample Types	Yes ²	No	No	No
Can change status to:	Active	Upgrading Inactive	Active	Active
Versioning enforced for changes	Yes	Yes	Yes	Yes
Reason Code applied to changes	By system	By user	By user	By user
Can export Sample Types to other systems	No	Yes ³	No	No

¹ Requires “Can View” eligibility.

² Requires “Can View” and “Can Administer” eligibility.

³ Requires “Can Export” eligibility.

Viewing Configured Sample Types

To view the Sample Types in the system:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click the **Sample Types** link. The *Sample Types* home page is displayed.

Name	Category	Description	Status
Air Sample	Air Samples	TSA Agar 150mm & RCS air samples	Active
Contact Plate	Contact Plates	Neutralising Agar 55mm surface sampling plates	Active
FingerDab Sample	FingerDabs	Neutralising FingerDab Agar 90mm plates	Active
Settle Plate	Settle Plates	TSA 90mm settle plates	Active
Swab Plate	Swab Plates	QuantiSwab on Neutralising Agar 90mm swab plates	Active
Thermo Contact Plate	Thermo Contact Plates	Neutralising Agar 55mm Surface Sampling Plates (Incubated 55-65 C)	Active

Sample Types Home Page

The grid lists all of the Sample Types that are registered in the system. Each Sample Type is identified by its name, category, description, and current status.

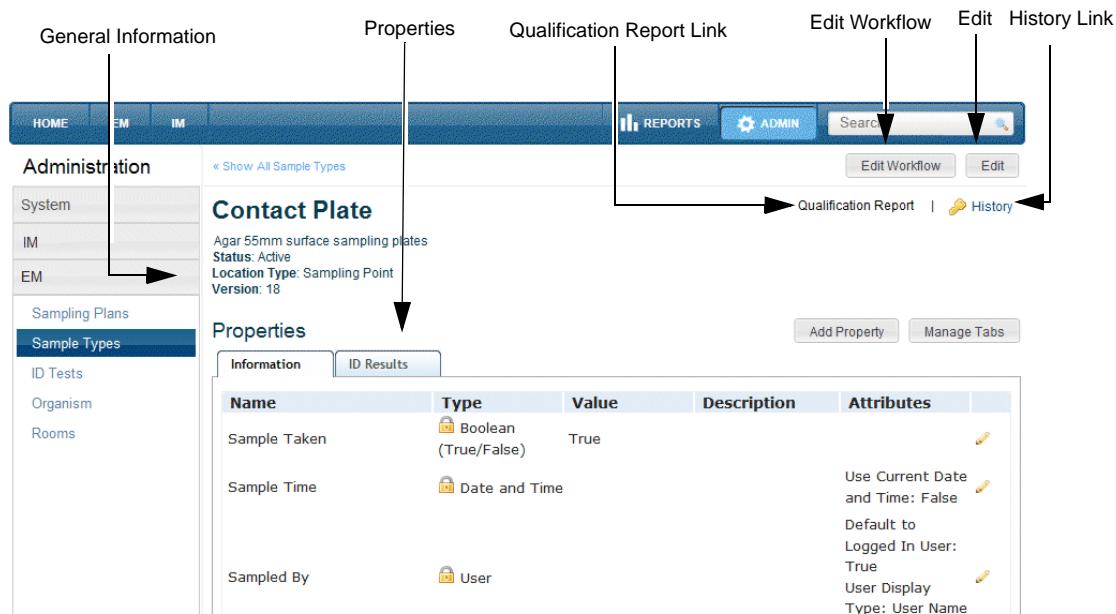
The icons in the first column represent actions that you can perform on the Sample Type. These are determined by your user eligibilities as well as the current status of the Sample Type.

Note: If the icons are not displayed, click the **Reset** button above the columns to reset the grid view. This may be required after an upgrade.

-  **Edit**—Allows eligible users to edit the corresponding Sample Type.
-  **Clone**—Allows eligible users to create a new Sample Type based on the configuration of the source Sample Type.
-  **Delete**—Allows eligible users to delete the Sample Type. This is only available for Sample Types whose status is "Draft."

You can filter the view of the grid as necessary. Refer to *the BIOVIA LIMS System Administration Guide*.

- 3 To view the details of a Sample Type, click its name in the grid. The Sample Type's *View* page displays its general information (status, associated Location Type, and current workflow version).



The screenshot shows the 'Contact Plate' sample type details. The 'General Information' section includes the sample name, status (Active), location type (Sampling Point), and version (18). The 'Properties' section lists attributes like 'Sample Taken' (Boolean, True), 'Sample Time' (Date and Time), and 'Sampled By' (User). The 'Qualification Report Link' section shows a link to a qualification report and a history link. The 'Edit Workflow' and 'History' buttons are also visible.

Name	Type	Value	Description	Attributes
Sample Taken	Boolean (True/False)	True		
Sample Time	Date and Time		Use Current Date and Time: False Default to Logged In User: True	
Sampled By	User		User Display Type: User Name	

Sample Type's "View" Page

The Sample Type's properties are displayed below its general information:

- A  **Lock** icon in the Type column indicates that the property is being used in a calculation or workflow activity, so its property type cannot be changed.
- Click **Edit**  to edit the corresponding property.
- Click **Delete**  to delete the corresponding property. This is only available for Sample Types whose status is "Draft."

The actions that you can perform on this Sample Type are represented by various command buttons below the main menu bar:

- Click **Add Property** to configure a new property for the Sample Type.
- Click **Manage Tab** to reorder properties or create new property tabs in order to group similar properties.
- Click **Delete** to delete a Sample Type whose status is "Draft."
- Click **Edit Workflow** to view and edit the Sample Type's workflow.
- Click **Edit** button to edit the definition of this Sample Type.

Click **Qualification Report** to generate a report in order to qualify the workflow. Refer to *Generating a Workflow Qualification Report for a Sample Type* on page 4-37.

Click the **History** link to view the audit trail and revisions made to the Sample Type. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.

- 4 To return to the Sample Type home page, click **Show All Sample Types** above the name of the Sample Type.

Creating a New Sample Type

To create a new Sample Type:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, click **Create Sample Type** above the grid.
- 4 In the *Create Sample Type* page:
 - a. Enter a name for the Sample Type. The name must be unique and cannot exceed 100 characters. Blank spaces at the beginning or end of the name are not allowed.

- b. Enter a category. The category represents the group to which this Sample Type will belong—typically it is the plural of the Sample Type name (for example, Contact Plates).
- c. Enter a description for the Sample Type (optional). The description cannot exceed 1000 characters.
- d. If you want to associate a Location Type with this Sample Type, select it from the list. The selection list contains all of the active Location Types in the system whose purpose is defined as a “Sampling Location.” If this does not apply to your Sample Type, leave **None** selected.

Create Sample Type

What are Sample Types?	Name <input type="text"/>
	Category (Help) <input type="text"/>
	Description <input type="text"/>
	Location Type <input type="text" value="None"/>
	Status <input type="text" value="Draft"/>
<input type="button" value="Cancel"/> <input type="button" value="Create"/>	

Creating a New Sample Type

- e. Click **Create**. The Sample Type’s View page is displayed with a status of “Draft.”
- 5 Click **Add Property** to configure properties for the Sample Type. The properties are described in the following section, *Description of Sample Type Properties*.
- 6 Once the properties are configured, click **Edit Workflow** to view or edit the default workflow for this Sample Type. Refer to Chapter 5, *Configuring Workflows for Sample Types*.
- 7 When you are done configuring the Sample Type, set its status to “Active” to make it available for use. Refer to *Editing a Sample Type* on page 4-34.

Configuring the Properties of a Sample Type

To get started, determine what types of properties your Sample Type will need. Typically, these will include properties similar to those listed in the following table.

Table 4-2 Properties of a Sample Type

Property Description	Property Type
Incubation start and end times	Date and Time
CFU count for bacteria	Numeric
CFU count for yeast and molds	Numeric
Total CFU count	Numeric Calculation
BIOVIA LES Procedure ID that will be used to identify the type of growth	BIOVIA LES Procedure
User who performed the sampling	User
Incubator ID	List

Adding a new property to a Sample Type

To configure the properties of the Sample Type, follow these steps:

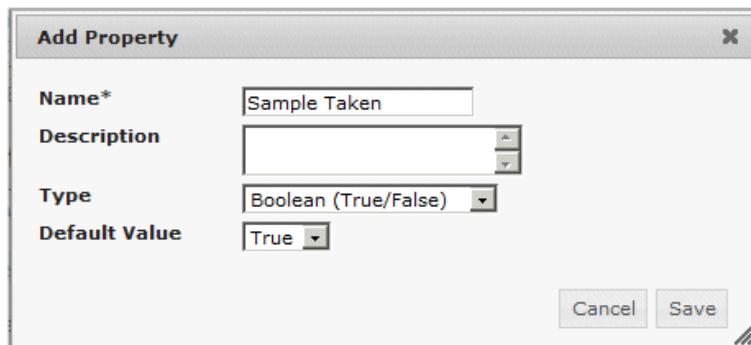
- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, click the name of the Sample Type whose properties you want to configure.
- 4 In the Sample Type's *View* page, click **Add Properties**.

The screenshot shows the BIOVIA Environmental Monitoring System interface. The top navigation bar includes links for HOME, EM, IM, REPORTS, ADMIN, and a search bar. Below the navigation is a sidebar titled 'Administration' with options: System, IM, EM, Sampling Plans, **Sample Types**, ID Tests, Organism, and Rooms. The main content area displays a 'Contact Plate' sample type with details: Agar 55mm surface sampling plates, Status: Active, Location Type: Sampling Point, and Version: 18. A 'Properties' tab is selected, showing tabs for Information and ID Results. An 'Add Property' button is circled in red. Other buttons include 'Manage Tabs', 'Qualification Report', and 'History'.

Adding Properties in Sample Type's "View" Page

5 In the *Add Property* dialog:

- a. Enter a name for the property. You can use duplicate names as long as they are based on a different property type. You cannot use an apostrophe in the property name.



Adding a Property to a Sample Type

- b. Enter a description (optional). The description cannot exceed 1000 characters.
- c. In the Type field, select the type of property from the selection list, then set any additional parameters for that type. Refer to *Description of Sample Type Properties* on page 4-10 for details of each property type.
- d. Click **Save**. The new property is listed in the Sample Type's View page .

The screenshot shows the BIOVIA Environmental Monitoring System Administration interface. The top navigation bar includes links for HOME, EM, IM, REPORTS, ADMIN, and a search bar. The main left sidebar under 'Administration' lists Start Page, System Settings, Users, Locations, Location Types, Labels, Export, and Import. The 'Location Types' section is currently selected. The main content area displays the 'Contact Plate' sample type. It shows the status as Active, location type as Sampling Point, and workflow version as 1. Below this, there's an 'Information' section with a 'Add Property' link. A tooltip 'New Property' points to this link. A table lists a single property: 'Incubator ID' (Type: Text). The table has columns for Name, Type, Value, Description, and Attributes. Under Attributes, it says Max Length: Blank and Min Length: Blank.

Adding Properties to a Sample Type

- 6 To create additional properties, repeat Steps 3-4.
- 7 When your Sample Type is complete, set its status to “Active” to make it available for use in the system. Refer to *Editing a Sample Type* on page 4-34.

Description of Sample Type Properties

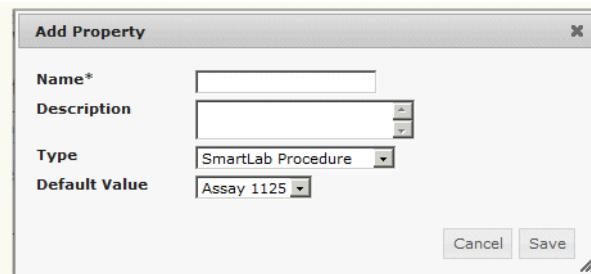
Each Sample Type is defined by one or more properties. The collection of properties describe all of the information specific to that Sample Type and apply to all samples based on that type. You can configure some properties with a default value, while other properties will be defined during the actual sampling or during other workflow activities.

This section lists the available property types for Sample Types:

- Accelrys LES Procedure
- Barcode
- Boolean (True/False)
- Calculate Duration
- Calculate Numeric
- Calculate Point in Time
- Date
- Date and Time
- Date Interval
- Duration
- File Upload
- Limit Specification
- Link
- List
- Numeric
- Relationship
- Text
- Text Multi-Line
- User

Accelrys LES Procedure property

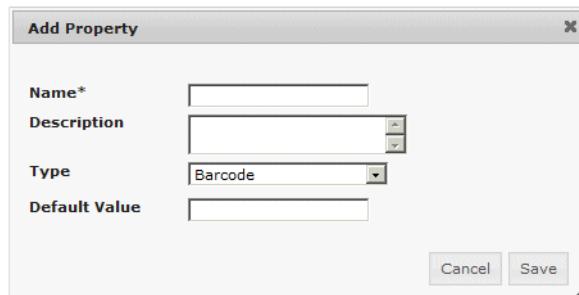
The **Accelrys LES Procedure** property is utilized in the Accelrys LES Procedure workflow activity in the workflow and is used for a sample that has to be tested by executing a BIOVIA LES procedure session. The Default Value selection list contains all of the BIOVIA LES procedures whose status is “Current.”



“Accelrys LES Procedure” Property

Barcode property

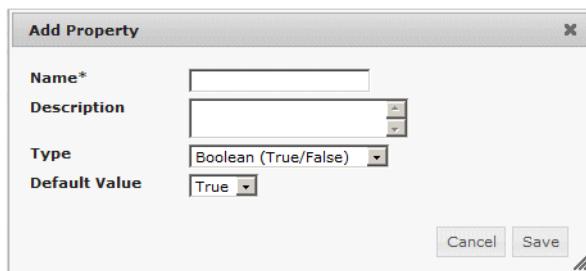
The **Barcode** property allows the user to scan a barcode or manually enter its numbers during workflow execution. Note that if you manually enter the value of the barcode, the entry is case-sensitive.



“Barcode” Property

Boolean (True/False) property

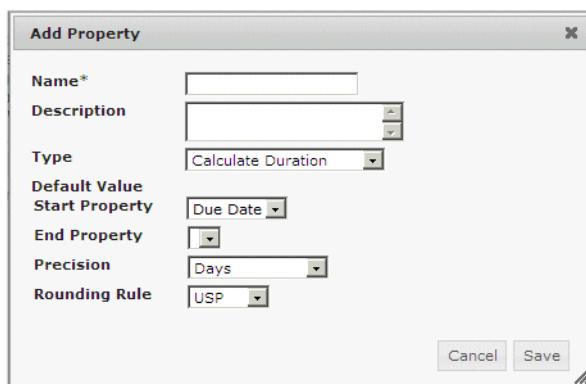
The **Boolean (True/False)** property defines a property based on a boolean value. The Boolean property includes a selection list that contains two values—“True” and “False.”



“Boolean” Property

Calculate Duration property

The **Calculate Duration** property 1) calculates the difference between two pre-configured “Date and Time” properties, or 2) calculates the sum of two pre-configured “Duration” properties.



“Calculate Duration” Property

The Calculate Duration property is calculated automatically when all required property values are collected during workflow execution. The Calculate Duration property is automatically updated if any of the required property values are recollected during workflow execution. Properties entered in any workflow state are available for use in a Calculate Duration Property. The calculated result is available for use in a subsequent calculation.

The Calculate Duration property supports the following math scenarios:

Date and Time property - **Date and Time** property

Duration property + **Duration** property

For example, the result of these calculations is a Duration property (*italicized*):

Actual Exposure Time = Sample.PickupTime - Sample.PutDownTime

Actual Incubation Time = Sample.IncubationEndTime - Sample.IncubationStartTime

Total Duration = Initial Duration + Extended Duration

The system provides the following formats:

Years: Months: Days: Hours: Minutes: Seconds

Note: Since a Calculate Duration property can calculate durations with different units and the unit designation is not known until the values are collected in the workflow, the system requires unambiguous definitions of all units. Therefore, Month is always defined as “30 days” and Year is always defined as “365 days.”

Example:

Calculate Duration = 1 Month + 5 Days, Precision = Days

Result = 35

The configuration parameters for the Calculate Duration property are described below:

- **Start Property / End Property**—The selection lists display all of the properties based on the following types:
 - Date and Time
 - Duration
 - Calculate Point in Time
 - Calculate Duration property

Note: If the value is selected for the End Property first, the Start Property list will only display compatible property types.

- **Precision**—Selection list displays the following options:
 - Seconds
 - Minutes
 - Hours
 - Days
 - 30 day months
 - 365 day years

- **Rounding Rule**—The system supports the following rounding rules:
 - USP
 - Ceiling (round up)
 - Floor (round down)
 - IEEE

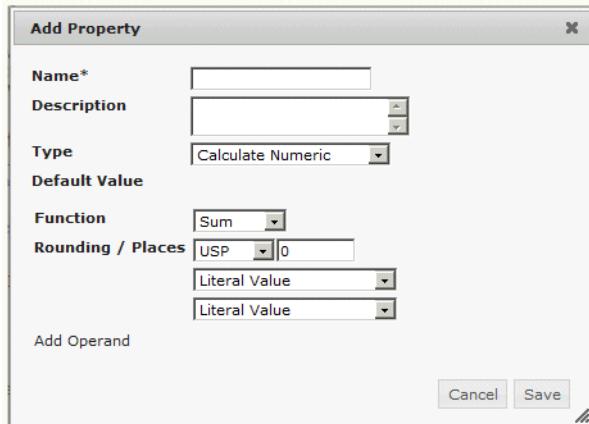
An audit trail is provided by the system for a change to a Calculate Duration property. The Reason Code "Updated" is entered by the system and the description lists the workflow state and the name of the property that was calculated.

When a Calculate Duration property is automatically updated due to a change in a Date and Time, Calculate Point in Time, or Duration value, the description lists the workflow action in which the value was changed, as well as the name of the property (or properties) that was recalculated.

Calculate Numeric property

The **Calculate Numeric** property defines a simple calculation that will be automatically executed once the required values have been collected during workflow execution. For example:

Total CFU Count = Yeast and Mold Count + Bacteria Count



"Calculate Numeric" Property

A Calculation Numeric property allows any number of pre-configured properties or literal values to be used in the calculation. The calculated result is considered to be a numeric value and can be used in subsequent calculations. The calculated property is automatically updated if any of the required property values are recollected during workflow execution. The calculated result is also available for reporting.

The configuration parameters for the Calculation Numeric property are described below:

- **Function**—Selection list displays the following functions:
 - Sum
 - Product
 - Average
 - Max
 - Min
 - Median
 - Mode
 - Divide
- **Rounding/Places**—The system supports the following rounding rules:
 - USP
 - Ceiling (round up)
 - Floor (round down)
 - IEEE
- **Operands**—You must have at least two operands on which to perform the calculation. The selection list displays all of the properties that are based on a numeric value, including a resolved Calculate Numeric property. The **Add Operand** link adds an additional row. You can also enter a literal value.

Note: If you enter “0” (zero) for a Divide function, the system treats the operand as a blank field and will not execute the calculation.

An audit trail is provided by the system for a change to a Calculate Numeric property. The Reason Code "Updated" is entered by the system and the description lists the workflow state and the name of the property that was calculated.

When a Calculate Numeric property is automatically updated due to a change in property value, the description lists the workflow action in which the value was changed, as well as the name of the property (or properties) that was recalculated.

The configuration parameters for the Calculation Numeric property are described below:

- **Function**—Selection list displays the following functions:

- Sum
- Product
- Average
- Max
- Min
- Median
- Mode
- Divide

- **Rounding/Places**—The system supports the following rounding rules:

- USP
- Ceiling (round up)
- Floor (round down)
- IEEE

Enter a numeric value to indicate the maximum number of decimal places. The precision of the calculated value is determined by the minimum precision of the operands OR the maximum number of decimal places, whichever is smaller. For example, given the operands [1.2, 3.45, 6.00] with USP rounding to [2] decimal places, the calculation result would be [10.7] because the least precise operand has one decimal place.

- **Operands**—You must have at least two operands on which to perform the calculation. The selection list displays all of the properties that are based on a numeric value, including a resolved Calculate Numeric property. The **Add Operand** link adds an additional row. You can also enter a literal value.

Note: If you enter "0" (zero) for a Divide function, the system treats the operand as a blank field and will not execute the calculation.

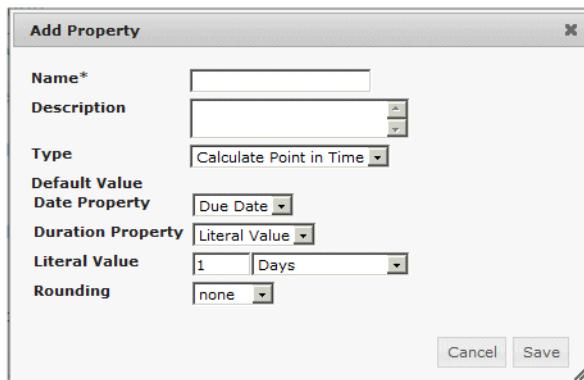
An audit trail is provided by the system for a change to a Calculate Numeric property. The Reason Code "Updated" is entered by the system and the description lists the workflow state and the name of the property that was calculated.

When a Calculate Numeric property is automatically updated due to a change in property value, the description lists the workflow action in which the value was changed, as well as the name of the property (or properties) that was recalculated.

Calculate Point in Time property

The **Calculate Point in Time** property calculates a point in time. The calculation is based on a pre-configured “Date and Time” property and a pre-configured “Duration” property. The Calculate Point in Time property supports the following mathematical operation:

Date and Time property + Duration property



“Calculate Point in Time” Property

For example, the result of each of these calculations is a “point in time” (*italicized*):

Maximum Exposure Time = Sample.PutDownTime + Sample.ExposureTime

Minimum Incubation Time = Sample.IncubationStartTime + Sample.IncubationTime

Target Date = Sample.IncubationStartTime + 5 Days

Target Date = Sample.IncubationStartTime + Sample.RequiredDays

The configuration parameters for the Calculate Point in Time property are described below:

- **Date Property**—The selection lists display all of the configured properties based on the following property types:
 - Date and Time
 - Calculate Point in Time
 - Calculate Duration
- **Duration Property**—The selection lists display all of the configured properties based on the following property types:
 - Duration
 - Calculate Point in Time
 - Calculate Duration

- **Literal Value**—Enter a literal value. The selection list displays the following options:
 - Seconds
 - Minutes
 - Hours
 - Days
 - Calendar months
 - 30 day months
 - Calendar years
 - 365 day years
- **Rounding Rule**—The system supports the following:
 - None
 - Ceiling (round up)
 - Floor (round down)

A rounded result (Ceiling/Floor) will be displayed as follows:

Rounded to Years: January 1st Day, Year, (12 or 24) Hour, 0 Minutes, 0 Seconds

Rounded to Months: Month 1st Day, Year, (12 or 24) Hour, 0 Minutes, 0 Seconds

Rounded to Days: Month, Day, Year, (12 or 24) Hour, 0 Minutes, 0 Seconds

Rounded to Hours: Month, Day, Year, Hour, 0 Minutes, 0 Seconds

Rounded to Minutes: Month, Day, Year, Hour, Minute, 0 Seconds

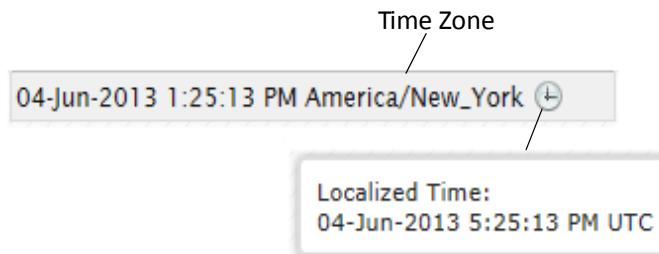
The Calculate Point in Time property is automatically executed when all of the required property values have been collected. If any of the properties defined in the calculation are re-collected, the system automatically re-calculates the result. The calculated result is available for use in subsequent calculations.

The result of the calculated duration is displayed in hours, minutes, and seconds. For example, the Date and Time property “now” plus four days will result in a value four days from the current time (now) at the same time of day (hours, minutes, seconds). The system rounds the result to the precision specified in the Duration property.

The result of the calculation also displays the date, time, and time zone in which the calculation was performed. When the value is calculated for the first time, the result inherits the time zone of its Date and Time property. If the time zone is unavailable (for example, when a Date property is used in the calculation), the time zone of the current client is used.

In most instances, when the value is re-calculated, the result displays the date, time, and time zone of the client that most recently updated the field. If only the Duration is changed (from any time zone), upon recalculation, the time zone of the date field is retained. If a time zone is unavailable, the time zone of the current client is used.

The clock icon is displayed if you are in a different time zone other than the one shown. You can mouse over the icon to convert the value to the localized time. For more information on the date and time format, refer to the *BIOVIA LIMS System Administration Guide*.

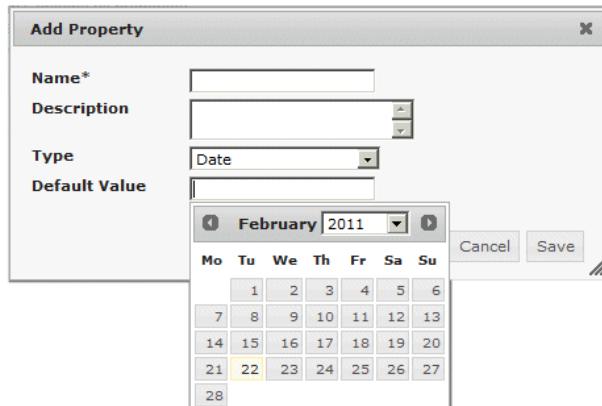


The system generates an audit trail for each change to a Calculate Point in Time property. In addition to the date and time stamp, the audit trail includes the following information:

- The Reason Code "Updated" is automatically entered by the system.
- The description lists the workflow action in which the value was calculated (or re-calculated) and the name of the property that was calculated (or re-calculated).

Date property

The **Date** property allows the user to select a date during workflow execution. The Date property includes a text field with a date picker control. You can either specify a default date or leave it blank.



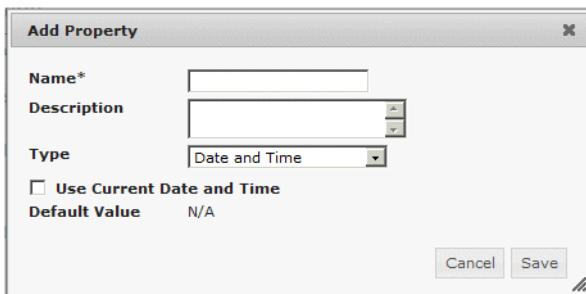
"Date" Property

Date and Time property

The **Date and Time** property records the date and time of a specific event during workflow execution. You can also use the Date and Time property in conjunction with the Calculate Duration property in order to calculate a specific value.

For example:

- Date/time settling plate is put down and picked up
- Date/time incubation starts and ends



"Date and Time" Property

The Date and Time property is ultimately used with the Calculate Duration property to allow you to calculate values like the ones shown below. The *italicized* items are Date and Time properties:

Maximum Exposure Time = *Sample.PutDownTime* + *Sample.ExposureTime*

Actual Exposure Time = *Sample.PickupTime* - *Sample.PutDownTime*

Minimum Incubation Time = *Sample.IncubationStartTime* + *Sample.IncubationTime*

Actual Incubation Time = *Sample.IncubationEndTime* - *Sample.IncubationStartTime*

The format for the Date and Time property is based upon the locale settings of the client. In the Windows operating systems, a locale is a set of user preference information related to the user's language, environment and/or cultural conventions. The locale settings include the formats used for numbers, dates, currencies and time, and includes hours, minutes and seconds. If the locale is based on a 12-hour clock, an AM/PM selector is also included. The system displays the value as a concatenation of the date and time. The value is formatted according to the defined Short Date and Short Time formats.

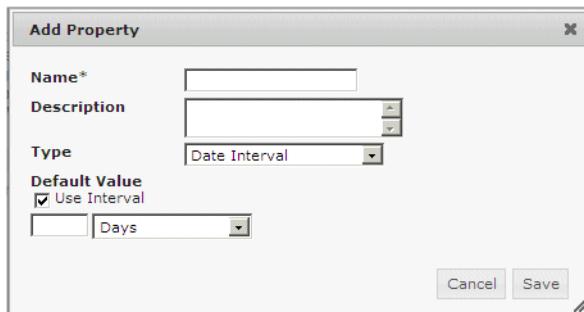
You can configure the Date and Time property to restrict the value to the current date/time (that is “now”) or allow the manual entry of the date and time. The recorded value is displayed in the bias of the client.

The options for the **Use Current Date and Time** check box are described below:

- **Checked**—Assigns the current date and time to the Date and Time property during workflow execution.
- **Unchecked**—Allows the user to select a date during workflow execution, as shown below. The date and time values default to the current date and time. The format of the date and the clock scale (12 or 24 hour) defaults to the locale settings of the client.

Date Interval property

The **Date Interval** property records a specific date for an event that happens during workflow execution. To configure an interval, click the **Use Interval** check box and enter a whole number and interval type (days, weeks, calendar months, calendar years). When the check box is not selected, the Date Interval is treated as a Date property.

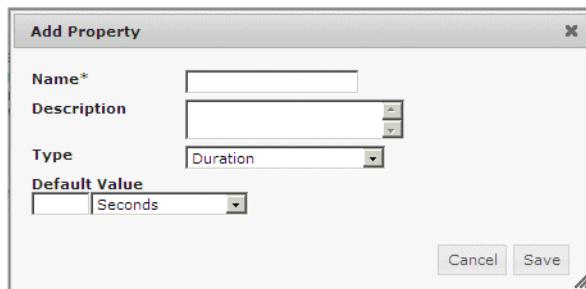


“Date Interval” Property

Duration property

The **Duration** property records the duration of an event that happens during workflow execution. It is used to record the duration of an event, such as:

- The number of days required for incubation
- The number of hours required for a settling plate
- The number of minutes required for a contact plate



"Duration" Property

The Duration is defined by a value and units. The units include the following options:

- Calendar years (defined as one calendar year)
- 365 day years (adds 365 days)
- Calendar months (for example, adding one month to January 31 yields February 28)
- 30-day months (adds 30 days)
- Days
- Hours
- Minutes
- Seconds

This property can be used with the Calculate Point in Time property to calculate a target point in time. The Duration property can also be used with the Calculate Duration property.

The *italicized* items are Duration properties:

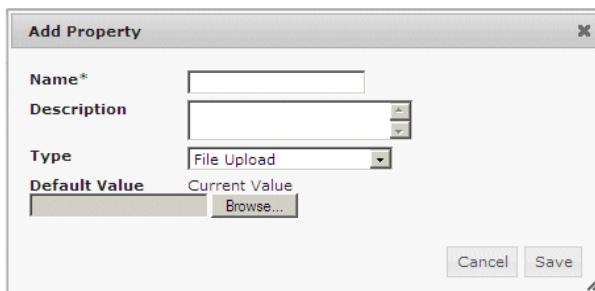
Maximum Exposure Time = *Sample.PutDownTime + Sample.ExposureTime*

Minimum Incubation Time = *Sample.IncubationStartTime + Sample.IncubationTime*

Required Incubation Time = *Sample.IncubationTime1 + Sample.IncubationTime2*

File Upload property

The **File Upload** property associates an external file to a sample. The File Upload property includes a text field with a Browse button that allows you to browse to the network and upload a file of your choice. You can specify a default file or you can leave it blank so the user can select a file during workflow execution.

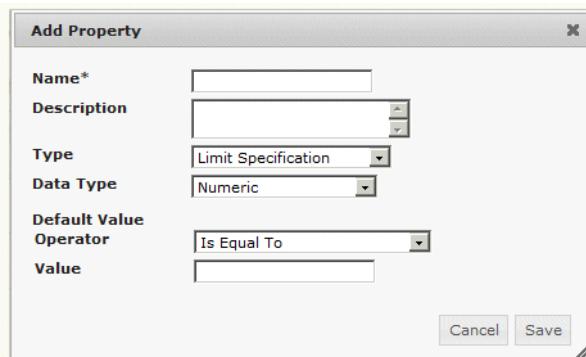


"File Upload" Property

Limit Specification property

The **Limit Specification** property applies a limit for a collected property value. It is typically used to set upper and lower numerical limits for test results, but you can also define text value limits as well.

The Limit Specification property works in conjunction with the **Apply Property Limit** workflow activity which evaluates the collected property value against the limit configured for that property. All out-of-limit results are marked with a red flag icon in the user interface so they can be easily identified.



"Limit Specification" Property

You can apply a limit to “compatible” properties. For example, you can evaluate the result of a Calculation property against a Numeric limit since the two are compatible. You can also evaluate a Text property against a Text (Multiple Line) limit, but you could not evaluate a Text against a Numeric limit. In the unlikely event that the limit is changed, the property value will be re-evaluated against the updated limit.

During group workflow actions, the strictest limit is applied to all of the consumables in the group.

The configuration parameters for the Limit Specification property are described below:

- **Data Type**—Contains the following selections:
 - Numeric
 - Text (Multiple Line)
 - Boolean (True/False)
- **Operator**—Lists the following options, based on the selected Data Type:

Numeric:

- Is Equal To
- Is Not Equal To
- Is Less Than
- Is Less Than or Equal To
- Is Greater Than
- Is Greater Than or Equal To

Text (Multiple Line):

- Is Equal To
- Is Not Equal To
- Contains

Boolean (True/False)

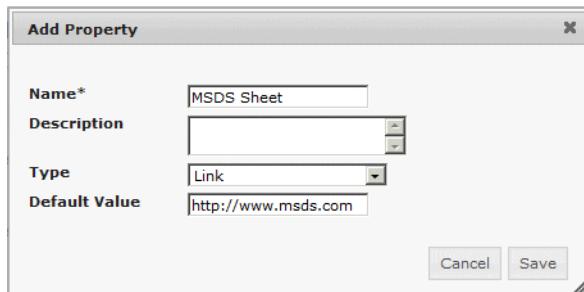
- Is Equal To
- Is Not Equal To

Value—Enter a value for the limit. If you use a decimal, the property value is evaluated according to the number of decimal places in your limit.

Value—Enter a value for the limit. If you use a decimal, the property value is evaluated according to the number of decimal places in your limit.

Link property

The **Link** property allows you to include a hyperlink in the properties displayed in the sample's *View* page. You must include the "http" or "https" URL format and the "www" domain name in the link.



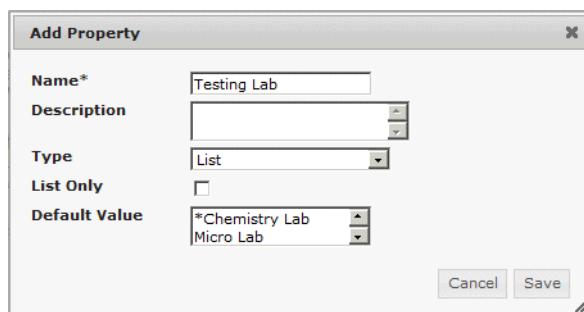
"Link" Property

List property

The **List** property allows the user to select a property value from a predefined list during workflow execution. You can configure the List property to force the user to select a value from the list or allow the user to override the list items and enter an alternate value.

The configuration parameters are described below:

- **List Only**—When checked, the user will have to select one item in the list. When unchecked, the user can enter a new list item.
- **Default Value**—To configure the list, type each list item and press **Enter**. A list item cannot exceed 1024 characters. To specify the default item in the list, precede it with an asterisk (*). If more than one value is specified as the default, only the first value is considered the default.



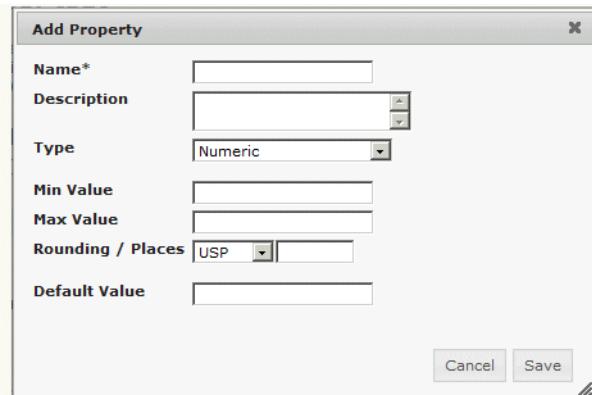
"List" Property

Numeric property

The **Numeric** property defines a property based on a numeric value. You can configure the property to require a minimum and/or maximum value, as well as specify a default value. The system supports the following rounding rules. The decimal places field requires a whole number.

- USP
- Ceiling (round up)
- Floor (round down)
- IEEE

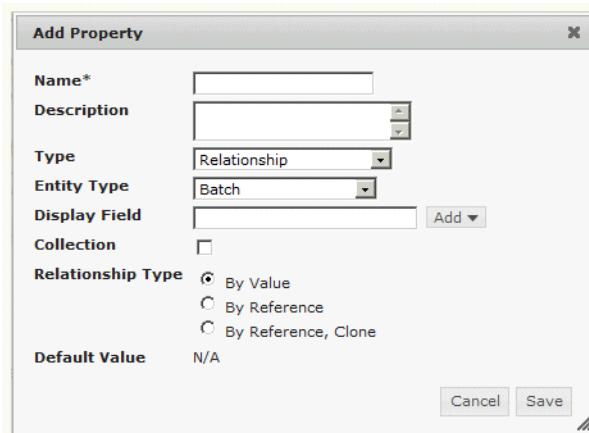
In addition, you can configure the precision format. This will force the user to enter a numeric value that meets the defined precision. When numerical data is provided from another system during workflow execution, the value is rounded by the predefined precision.



"Numeric "Property

Relationship property

The **Relationship** property is used to establish a “link” between a property in your current Sample Type to one or more properties of an active Entity Type. Entity Types are described in the *BIOVIA LIMS System Administration Guide*. Once you configure a Relationship property, you can use it in your current workflow to develop various “touch points” between the samples associated with this Sample Type and instances of the related Entity Type. Note that you can configure more than one relationship property for a Sample Type.



"Relationship" Property

The configuration parameters for the Relationship property are described below:

- **Entity Type**—The list is pre-populated with all of the Entity Types whose status is “Active.” Select the Entity Type to which you want to establish a relationship property.
- **Display Field**—Lists the ID as well as the names of the properties of the selected Entity Type, each enclosed by curly braces {Id}. Select one or more properties to create a display pattern. The display pattern should be specific and unique enough for your needs. For example, if the Display Field is the “Manufacturer” property and there are many “Manufacturer” entities with the same name, you may not be able to distinguish one entity from another. In this case, you could append additional information to the display pattern.

The order determines how they are presented to the user during workflow execution. For example, the display pattern **{Id} - {Spec Name} - {pH Upper Limit} - {pH Lower Limit}** is shown below.

pH Test - By Value

ID: 269182

Properties

Information

Name	Value
My Spec	268202 - Spec 2 - less_than_or_equal 10 - greater_than_or_equal 4
pH Test Result	5.0

Display Pattern

Active

History

How Display Pattern is Rendered during Workflow Execution

- **Collection**—Determines if this is a “one-to-one” or “one-to many” relationship. A one-to-one relationship links the property of your current Sample Type to the related property of one Entity Instance. A one-to-many relationship links the property of your current Sample Type to the related properties in a group or collection of Entity Instances. A collection is typically used for a “Test” or “Sample” Entity Type from which you will create many Entity Instances of tests or samples.
- **Relationship Type**—Provides these options:
 - By Value
 - By Reference
 - By Reference, Clone
- **By Value:**
Used for a one-to-one relationship and links the property to a literal value of the related property. Not applicable to collections. The data returned by the linked instance will be stored and permanently maintained. If the source linked property is updated, the value collected at the time the sample was processed does not get updated, thus it is considered a “static” link. This link is appropriate for a specification defined at the time of the link.
- **By Reference:**
Links the Sample Type’s property to the current value of the linked property. The data returned by the linked instance will be stored as a reference. Any change in the linked value will be reflected in the current sample. Thus, if the source linked property is updated, the value of the sample is also is updated, thus it is considered a “dynamic” link. This link is appropriate for contact information such as phone numbers and addresses.

- **By Reference, Clone:**

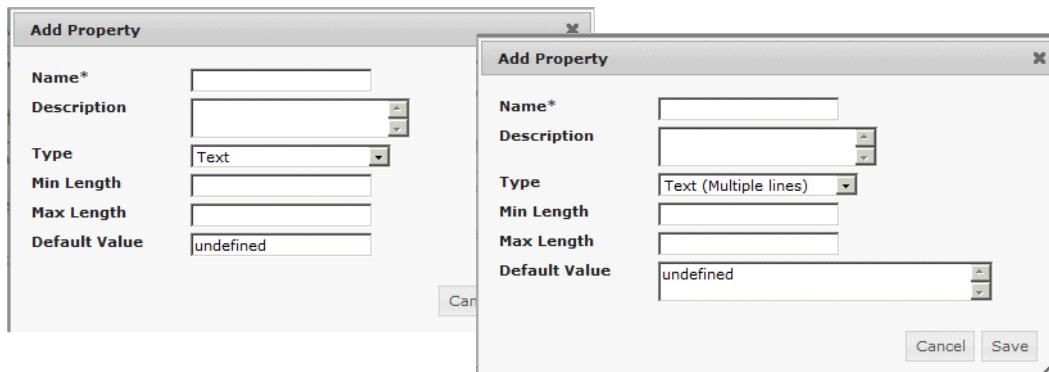
The link will create new instances of the linked instance. For example, an “Order” Entity Type will define the tests that need to be run on samples of a specified product. An instance of the Order will clone instances of the product and all of the required tests. The following table explains how a Relationship property in a cloned instance obtains its value.

Table 4-3 How a “Relationship” Property in a Cloned Instance Obtains its Value

Relationship Type		
“By Value”	“By Reference”	“By Reference, Clone”
The cloned instance has the same value as the source property value.	The cloned instance inherits the same value as the property value in the latest version of the source instance.	The cloned instance inherits the same value as the property value in the latest version of the source instance.
If the source property value is updated, the new value will be available in the cloned instance. You can then select the new value or leave the original value.	If the source property value is updated, the clone’s property value is automatically updated.	If the source property value is updated, the clone’s property value is not automatically updated.

Text and Text (Multiple Lines) property

The **Text** and **Text (Multiple Lines)** properties allow the user to define a property with a single line or multiple lines of text during workflow execution. You can require a minimum/maximum number of characters and specify a default value. The text cannot exceed 1024 characters.



“Text” and “Text (Multiple Lines)” Properties

User property

The **User** property allows a user's name to be associated with a sample. The User property provides a selection list containing all of the active users in the system who have access to the current Site. If you do not default to the logged in user, the user will be able to select a user name during workflow execution. You can configure the User property so that the list defaults to the user who is currently logged on or to the first user (listed alphanumerically).

You can also specify how the user names are displayed in the selection list. The configuration parameters are described below:

- **Default to Logged In User**—When checked, the selection list defaults to the name of the user who is currently logged in. When unchecked, displays the list of users in alphanumeric order.
- **Show User Name - Full Name**—Displays the names in the list by the User Name and the user's full name. The BIOVIA LIMS application does not verify a user's full name is unique in the system, therefore this is the recommended setting if you have registered users with the same full name (first name, last name). In this case, the User Name will be the unique identifier.
- **Show User Name Only**—Displays the names in the list by User Name only.
- **Show Full Name Only**—Displays the names in the list by the user's full name.



"User" Property

When a Set Property activity is configured for the User property in a workflow, only the users with access to the current Site will appear in the selection list.

Example—Configured Properties for a Contact Plate

The following figure shows the configured properties of a Sample Type created for a contact plate.

Contact Plate

Status: Active | Location Type: Sampling Point | Workflow Version: 1 | Qualification Report | History

Name	Type	Value	Description	Attributes
Incubator ID	Text			Max Length: Blank Min Length: Blank
Bin ID	Text			Max Length: Blank Min Length: Blank
Incubate Start	Date and Time			Use Current Date and Time: False
Incubate End	Date and Time			Use Current Date and Time: False
Incubate Duration	Duration	1 Minutes		
Incubate End Target	Calculate Point in Time	Mouse over to see.		
CFU Bacteria	Numeric			Max Value: Blank Min Value: Blank
CFU Yeast and Mold	Numeric			Max Value: Blank Min Value: Blank
CFU Total	Calculate Numeric	Mouse over to see.		
Identification	Text			Max Length: Blank Min Length: Blank
Incubation Duration	Calculate Duration	Mouse over to see.		
SmartLab Procedure ID	SmartLab Procedure	EMID1		

Configured Properties for Contact Plate

The configuration properties in this example are described in the following table.

Table 4-4 Configured Properties of a Contact Plate

Property Name	Property Type	Description	Configuration Settings
Bin ID	Text	Collects the ID of the bin in which the plate is located.	Supplied by user during workflow execution.
Incubator ID	Text	Collects the ID of the incubator in which the plate is placed.	Supplied by user during workflow execution.
Incubate Start	Date and Time	Collects the time the plate is placed in the incubator.	Use Current Date and Time: False
Incubate End	Date and Time	Collects the time the plate is removed from the incubator.	Use Current Date and Time: False
Incubate Duration	Duration	Specifies the length of time for incubation.	N Minutes
Incubation End Target	Calculate Point in Time	Calculates the expected time the samples will complete their incubation period.	Date Property: Incubate Start Duration Property: Incubate Duration Rounding: None
Incubation Duration	Calculate Duration	Calculates the actual amount of time the samples have been incubated.	Start Property: Incubate Start End Property: Incubate End Precision: Minutes Rounding: USP
CFU Bacteria	Numeric	Collects the number of Bacteria CFUs.	Supplied by user during workflow execution.
CFU Yeast and Mold	Numeric	Collects the number of Yeast and Mold CFUs.	Supplied by user during workflow execution.
CFU Total	Calculate Numeric	Calculates the total CFUs found on the plate.	Rounding: USP Function: Sum Rounding Places: 0 Operands: CFU Bacteria, CFU Yeast and Mold

(continued)

Table 4-4 Configured Properties of a Contact Plate (continued)

Property Name	Property Type	Description	Configuration Settings
CFU Total	Calculate Numeric	Calculates the total CFUs found on the plate.	Rounding: USP Function: Sum Rounding Places: 0 Operands: CFU Bacteria, CFU Yeast and Mold
Identification	Text	Collects the identification of the CFUs as determined in the BIOVIA LES procedure execution session.	Supplied by BIOVIA LES procedure session.
Accelrys LES Procedure ID	Accelrys LES Procedure	Specifies the BIOVIA LES procedure ID used to identify the CFUs.	<BIOVIA LES Procedure ID>

Organizing the Properties of a Sample Type

You can organize the properties of a Sample Type in the same ways as you can with Location Types (for example, reordering the properties and creating new tab for grouping similar properties). Refer to *Organizing the Properties of a Location Type* on page 2-14.

Cloning a Sample Type

You can clone an existing Sample Type to create a new Sample Type. The cloned Sample Type requires a new name, but it will have the same definition, properties, and workflow as the source Sample Type. This can be a great time saver if you need to create similar Sample Types.

To clone a Sample Type:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, click **Clone**  preceding the name of the source Sample Type.
- 4 In the *Clone Sample Type* page:
 - a. Enter a new Sample Type name. The name must be unique and cannot exceed 100 characters. Blank spaces at the beginning or end of the name are not allowed.
 - b. Change any of the remaining information as necessary.
 - c. Click **Create**.

The screenshot shows a 'Clone Sample Type' dialog box. On the left, there's a sidebar with the heading 'What are Sample Types?' followed by a short text block. The main right panel has several input fields: 'Name' (Contact Plate), 'Category (Help)' (Contact Plates), 'Description' (empty), 'Location Type' (Sampling Point), and 'Status' (Draft). At the bottom are 'Cancel' and 'Create' buttons.

Cloning an Existing Sample Type

The details of the cloned Sample Type are displayed in its *View* page with a status of “Draft.”

- 5 To edit any of the properties of the cloned Sample Type, refer to *Editing the properties of a Sample Type* on page 4-35.

Editing a Sample Type

This section explains how to edit the definition and properties of a Sample Type. To modify an existing Sample Type, set its status to “Inactive,” make your edits, then set its status back to “Active” to make it available for use in the system. An alternate approach is to make the changes to the Sample Type in the Development site, then move it to Production via the export/import function.

- Sample Groups added to the calendar prior to the change will remain based on the older version of the Sample Type.
- Sample Groups added to the calendar after the change will reflect the updated Sample Type.

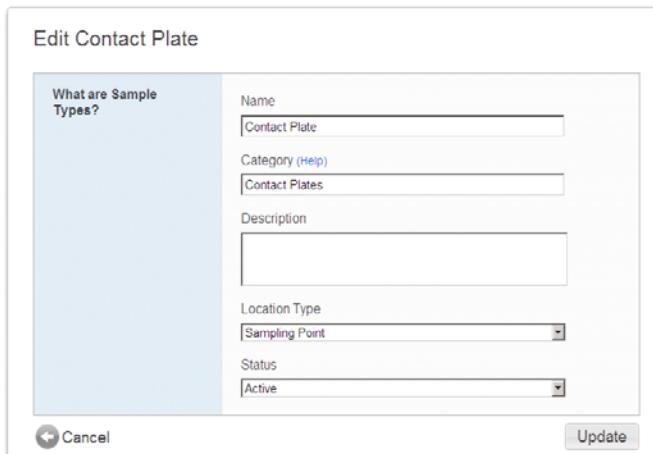
Editing the definition of a Sample Type

To edit the definition of a Sample Type:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.

- 3 In the *Sample Types* home page, do one of the following:
 - Click **Edit**  preceding the name of the Sample Type.
 - Click the name of the Sample Type to open its *View* page and click **Edit**.
- 4 In the *Edit Sample Type* page, edit the appropriate fields as necessary.

Note: A  **Lock** icon is displayed if the Sample Type references a Location Type's property in its workflow—you cannot change or remove the Sample Type's Location Type.



The screenshot shows the 'Edit Contact Plate' dialog box. It has a title bar 'Edit Contact Plate'. On the left, there is a sidebar with the heading 'What are Sample Types?' followed by five entries: 'Name', 'Category (Help)', 'Description', 'Location Type', and 'Status'. Each entry has a corresponding input field. The 'Name' field contains 'Contact Plate', the 'Category' field contains 'Contact Plates', the 'Description' field is empty, the 'Location Type' field contains 'Sampling Point', and the 'Status' field contains 'Active'. At the bottom of the dialog are two buttons: 'Cancel' on the left and 'Update' on the right.

Editing the Definition of a Sample Type

- d. Click **Update**.
- 5 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Sample Types whose status is "Draft."

Editing the properties of a Sample Type

This section assumes that you have changed the status of the Sample Type to "Upgrading" in order to make it unavailable for use while you edit it.

To edit a property of a Sample Type:

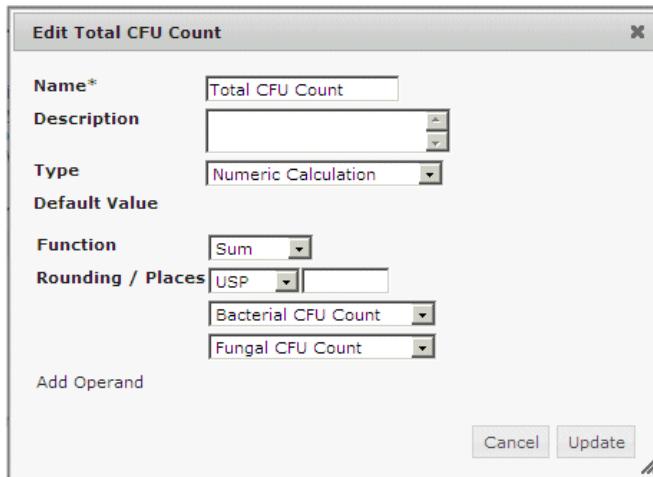
- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, click the name of the Sample Type whose properties you want to edit.

- 4 In the Sample Type's *View* page, click **Edit**  to the right of the property you want to edit.
- 5 In the *Edit Property* dialog box, edit the property as necessary.

Special Notes on the Type" field:

- It is recommended that you do not change the Type field of an Entity Type that has been previously active in the system.
- A **Lock** icon  in the Type field indicates that the property is being used in a calculation or workflow activity, so its property type cannot be changed. This applies to the following property types— Numeric, Duration, Date and Time, and Relationship. If you need to change the property type, you must remove it from the calculation or workflow.

For a description of the properties, refer to *Description of Sample Type Properties* on page 4-10.



Editing a Property of a Sample Type

- 6 Click **Update**.
- 7 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Sample Types whose status is "Draft." The updated values will be displayed in the Sample Type's *View* page.
- 8 When you are done, edit the Consumable Type again and change its status to "Active" to make it available for use in the system.

Deleting the properties of a Sample Type

You can only delete a property if the status of the Sample Type is “Draft.”

To delete a property of a Sample Type:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, click the name of the Sample Type whose property you want to delete.
- 4 In the Sample Type’s *View* page, click **Delete**  to the right of the property.
- 5 In the *Confirmation* dialog, click **OK** to delete the property.

Generating a Workflow Qualification Report for a Sample Type

IMPORTANT! If you are generating qualification reports in a non-Western European language, you must have the “Arial Unicode MS” font installed on your server(s) in order for the reports to display correctly.

BIOVIA LIMS provides an integrated reporting function that allows you to run a Qualification Report in order to view and qualify the workflow of a Consumable Type. The report is based on a predefined report template that is supplied with the system.

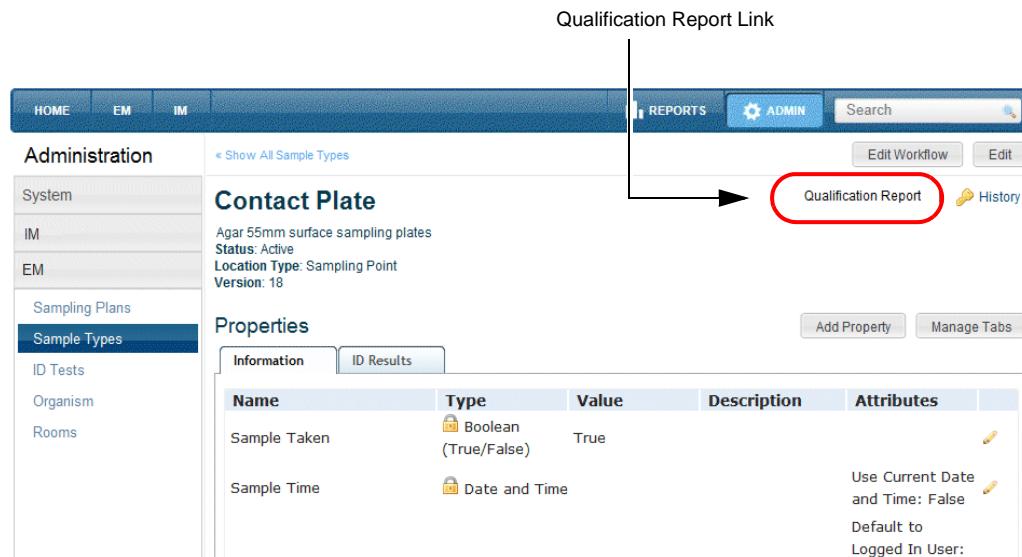
- The header of the report lists the details of the Consumable Type (name, version, current status, workflow version).
- The following fields are reported for each property in the Consumable Type:
 - Property Name
 - Property Type
 - Property Value
 - Property Description
 - Property Attributes
- When the property does not contain a value, the text “Not Predefined” is displayed.
- The following fields are reported for each workflow state:
 - Actions
 - Activities
 - Parameter Name
 - Parameter Value
 - Metadata Name
 - Metadata Value

- When the action or activity does not contain a value, the text “Not Applicable” is displayed.
- The last page of the report contains two rows for signatures, each containing the following fields:
 - Purpose
 - Name
 - Signature
 - Date

Note: The time values in the Qualification reports may differ from the values stored in the database by one second. This is caused by the translation that is performed by the Crystal Report Template on the serial value stored in the database.

To run a Qualification Report for a Sample Type:

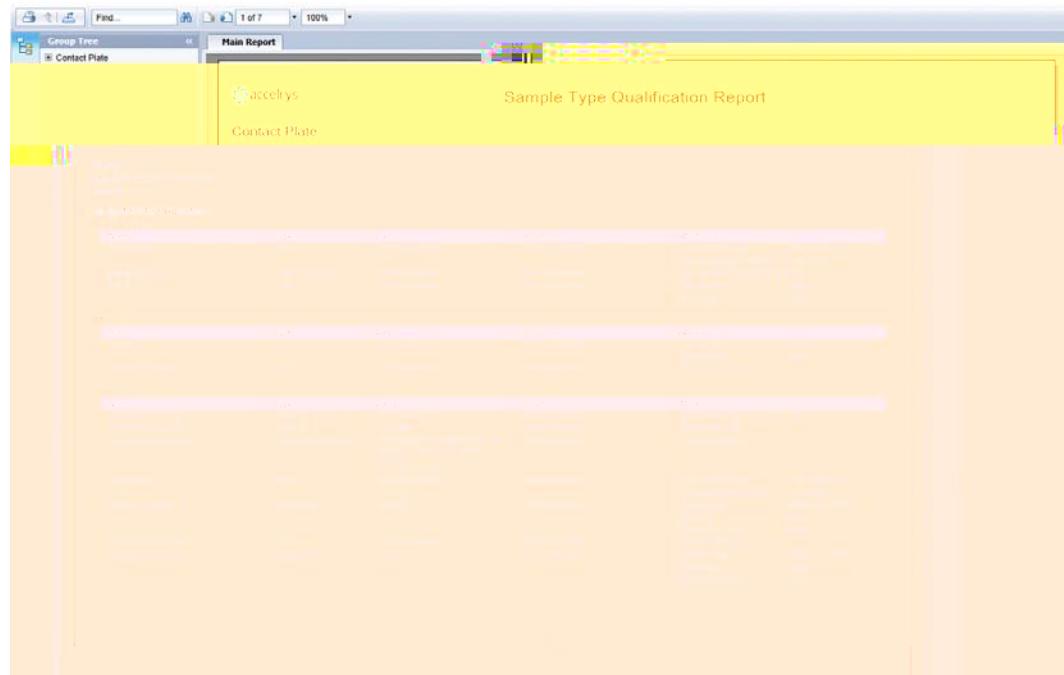
- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Type* home page, click the name of the Sample Type whose details you want to view.
- 4 In the Sample Type’s *View* page, click **Qualification Report**.



The screenshot shows the 'Sample Type's "View" Page'. At the top, there is a 'Qualification Report Link' with an arrow pointing to the 'Qualification Report' button, which is circled in red. The page includes a navigation bar with 'HOME', 'EM', and 'IM' tabs, and a search bar. The main content area displays the 'Contact Plate' sample type details, including its status as 'Active' and location type as 'Sampling Point'. Below this is a 'Properties' section with a table showing two properties: 'Sample Taken' (Boolean, True) and 'Sample Time' (Date and Time). There are also sections for 'Add Property' and 'Manage Tabs'.

Sample Type’s “View” Page

The report is generated and is displayed in the Report Viewer. You can expand the nodes in the Group Tree on the left to view the workflow's structure. You can also export or print the report as required.



Qualification Report

Upgrading a Sample Type

You can set the status of a Sample Type to “Upgrading” in order to be able to group or filter the grid in the *Sample Types* home page based on this status. Note that the “Upgrading” status has no effect on Sampling Locations. To change the status, refer to *Editing a Sample Type* on page 4-34.

Inactivating a Sample Type

To make an active Sample Type unavailable for use in the system, set its status to “Inactive.” While the Sample Type is inactive, the system will not allow Sample Groups to create samples, and this Sample Type will not available in a Location definition. To change the status, refer to *Editing a Sample Type* on page 4-34.

Deleting a Sample Type

You can only delete Sample Types whose status is “Draft.”

To delete a Sample Type from the system:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, do one of the following:
 - Click **Delete**  preceding the name of the Sample Type.
 - Click the name of the Sample Type to open its *View* page and click **Delete**.
- 4 In the *Confirmation* dialog, click **OK** to delete the Sample Type.

Exporting Configured Sample Types to Other Systems

Once you have finished configuring your Sample Types, you can export them to an XML file so you can import and deploy them on other systems in your environment. Refer to the *BIOVIA LIMS System Administration Guide*.

What's Next?

Chapter 5 explains how to configure workflows for your Sample Types.



5

Configuring Workflows for Sample Types

What is a Workflow?

The life cycle of a sample in the Environmental Monitoring system starts when the sample is released for use on its scheduled date and ends when a defined series of sequential actions have been completed. These actions are referred to as the sample's *workflow*. The workflow defines which actions you can perform on a sample at any given stage in which it exists in the system.

A workflow is comprised of the following three items:

- **Workflow States**

A workflow *state* corresponds to the current state of the sample. For example, a "Scheduled" state applies to a sample that has been made available in the system on its scheduled date, is based on a specified Sampling Plan, and is associated with a specific sampling location, but no actions have yet been taken (for example, the sampling has not been performed).

- **Workflow Actions**

A workflow *action* represents something you can do to a sample in its current state. A workflow action is identified by a verb, such as "sample," "incubate," or "approve." For example, a sample in the "Scheduled" state typically contains two workflow actions—"Sample" and "Cancel Sample."

- **Workflow Activities**

A workflow action is comprised of one or more activities. A workflow *activity* describes the things you can do when that action is performed on a sample. For example, a workflow action "Approve" will typically have an "E-Signature" activity that will collect the electronic signature of the person who approved the action. Some workflow activities will collect the value of a sample's property. For example a "Set Sample ID" activity will collect the value of the "Sample ID" property for that sample.

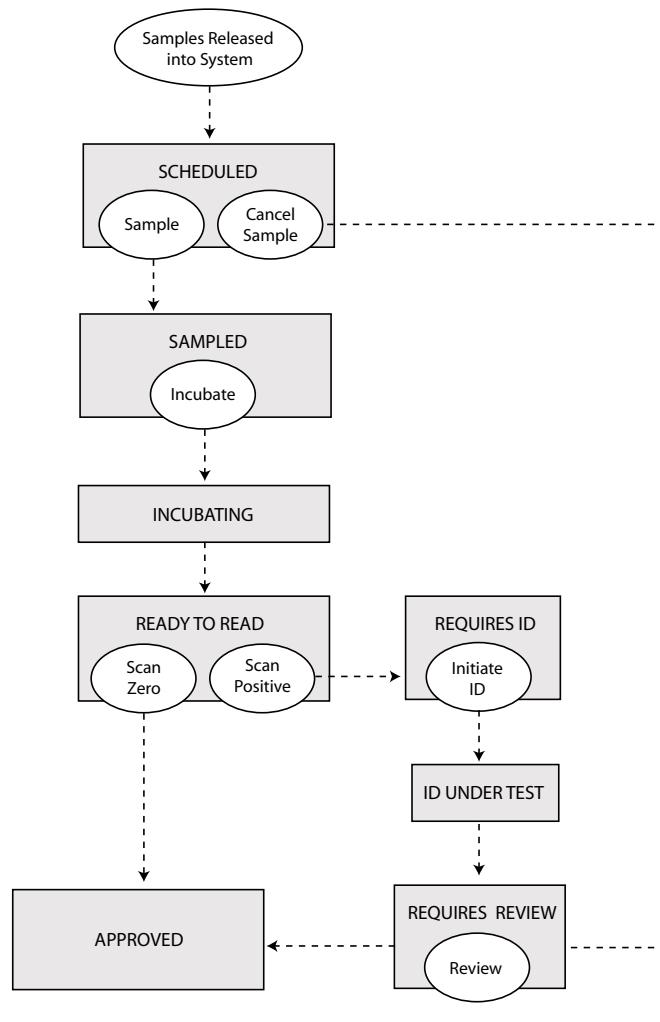
5 Configuring Workflows for Sample Types

Other activities can be used to trigger an event, such as spawning a BIOVIA LES procedure session to identify the colony forming units (CFUs) that have exceeded the Action Limit.

Every Sample Type defined in the system has an underlying workflow associated with it. When you create a new Sample Type, its default workflow contains three states (Scheduled, Sampled, and Approved). You can keep the default states and add your own actions and activities, or add additional states to customize the workflow for your specific Sample Type.

Example of a Configured Workflow for a Sample Type

The following figure is an example of a workflow based on a Sample Type for a contact plate. The workflow states are depicted as gray boxes. The workflow actions that can be performed in each state are listed in the white ovals. Once the sample enters the “Approved” state, its life cycle has ended and it cannot return to a previous state.



Workflow for a Sample Type based on a Contact Plate

The following sections describe the configuration parameters for each state in the workflow example.

“Scheduled” state

The “Scheduled” state marks the beginning of the sample’s life cycle and is the first state in which a sample enters. It indicates that the sample was released into the system at 12:00 am on the day it was scheduled and is now ready to be sampled.

5 Configuring Workflows for Sample Types

The following table lists the workflow actions and configured activities for the “Scheduled” state.

Table 5-1 “Scheduled” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Sample (User Generated)	Perform the sampling. When the action is executed, the workflow state changes to “Sampled.”	Scan ID or Set Sample ID	None
		Set Instruction Text	Instruction Text = Record the Bin ID and Sample ID.
		Set Property	Property = Bin ID Apply to Entire Group
		Set State	Target State = Sampled
		Set Instruction Text	Instruction Text = Record the Bin ID and Sample ID.
Cancel Sample (User Generated)	Cancel the sampling and enter an annotation. When the action is executed, the workflow state changes to “Requires Review.”	E-Signature	Type = Annotate
		Set Instruction Text	Instruction Text = Record the reason for cancelling the sample.
		Set State	Target State = Requires Review

“Sampled” state

The “Sampled” state indicates that the sample has been collected and is ready to be incubated. The following table lists the workflow actions and configured activities for the “Sampled” state.

Table 5-2 “Sampled” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Incubate (User Generated)	Incubate the sample. When the incubation has started, the workflow state changes to “Incubating.”	Set Property	Property Name = Incubator ID Apply to Entire Group
		Set Property	Property Name = Incubate Start Apply to Entire Group
		Set State	Target State = Incubating
		Set Instruction Text	Instruction Text = Record the Incubator ID and Start Time.

“Incubating” state

The “Incubating” state indicates the sample is currently being incubated for a set period of time. When the incubation is complete, the workflow state changes to “Ready to Read.” The following table lists the workflow actions and configured activities for the “Incubating” state.

Table 5-3 “Incubating” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Incubate Complete (User Generated)	Incubation time is complete. When the incubation is complete, the workflow state changes to “Ready to Read.”	Time Trigger	Trigger Property = Incubate End Target
		Set State	Target State = Ready for Read

5 Configuring Workflows for Sample Types

“Ready to Read” state

The “Ready to Read” state indicates the sample has completed incubating and is ready to read. The following table lists the workflow actions and configured activities for the “Ready to Read” state.

Table 5-4 “Ready to Read” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Scan Zero (User Generated)	Scan the barcodes of the samples that read zero. When the action is executed, the workflow state changes to “Approved.”	Scan ID or Set Sample ID	None
		Set Instruction Text	Instruction Text = Scan the zero plates.
		Set Property	Property Name = CFU Bacteria Default Value: 0
		Set Property	Property Name = CFU Mold and Yeast, Default Value: 0
		Set State	Target State = Approved

Table 5-4 “Ready to Read” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Scan Positive (User Generated)	<p>Scan the barcodes of the samples that read positive:</p> <ul style="list-style-type: none"> If the number of CFUs exceeds the specified Action Limit, the workflow state changes to “Requires ID.” If the number of CFUs is equal to or less than the Alert Limit, the workflow state changes to “Requires Review.” 	Scan ID or Set Sample ID	None
		Set Instruction Text	Instruction Text = Record the growth observations.
		Set Property	Property Name = CFU Bacteria Default Value: <i>unchecked</i> Apply to Group: <i>unchecked</i>
		Set Property	Property Name = CFU Mold and Yeast Default Value: <i>unchecked</i> Apply to Group: <i>unchecked</i>
		Set State	Target State = Requires ID <i>Condition</i> : CFU Total > Location Type.Action Limit
		Set State	Target State = Requires Review <i>Condition</i> : CFU Total <= Location Type.Alert Limit

5 Configuring Workflows for Sample Types

“Requires ID” state

The “Requires ID” state indicates the sample exceeds the CFU Alert Limit and you need to run tests to identify the CFUs. The following table lists the workflow actions and configured activities for the “Requires ID” state.

Table 5-5 “Requires ID” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Initiate ID (User Generated)	BIOVIA LES procedure session is released for execution in order to identify the CFUs that have exceed the Action Limit. When the action is executed, the workflow state changes to “ID Under Test.”	Accelrys LES Procedure	<ul style="list-style-type: none">• LES Procedure Property = LES Procedure ID• Complete Status = Completed• To LES: Property: CFU Total = Data Field: CFU Observation• From LES: Data Field = Identification Results = Property: Identification

“ID Under Test” state

The “ID Under Test” state indicates an LES procedure session is currently being executed to identify the CFUs that exceeded the Alert Limit. When identification is complete, results are sent back to the Environmental Monitoring system, and the workflow state changes to “Requires Review.” The following table lists the workflow actions and configured activities for the “ID Under Test” state.

Table 5-6 “ID Under Test” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Accelrys LES Session Complete	BIOVIA LES procedure session in progress.	Set State	Target State = Requires Review

“Requires Review” state

The “Requires Review” state indicates the results of the ID Test are currently under review and have not yet been approved. The following table lists the workflow actions and configured activities for the “Requires Review” state.

Table 5-7 “Requires Review” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
Review (User Generated)	Qualified person reviews: <ul style="list-style-type: none">Annotations for cancelled sample(s).Identification results from the LES procedure session. When the action is executed, the workflow state changes to “Approved.”	e-Signature	Type = Reviewed
		Set State	Target State = Approved

“Approved” state

The “Approved” state indicates that the sample has been reviewed and approved. This marks the end of the sample’s life cycle in the system.

Table 5-8 “Approved” Workflow State

Workflow Action/Type	Description	Workflow Activities	Configuration Settings
None	---	None	None

Required Eligibilities for Configuring Workflows

In order to manage Sample Types, users must belong to a User Role that has the following eligibilities:

- **Can View Sample Types**—Allows users to view the registered Sample Types and their properties, workflows, and audit trails.
- **Can Administer Sample Types**—Allows users to create new Sample Types, configure their properties and workflows.

In addition, to test the workflows of **Sample Types**, users must have the following eligibilities:

- **Can View Samples**—Allows users to view the samples released into the system.
- **Can Process Samples**—Allows users to execute the workflows of released samples released into the system.

Launching the Workflow Editor

The Workflow Editor provides a graphical user interface that allows you to easily configure the actions and activities that define the various states of a sample's workflow.

To open the Workflow Editor:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, click the name of the Sample Type whose workflow you want to view.
- 4 In the Sample Type's *View* page, click **Edit Workflow** in the upper right corner of the page to launch the Workflow Editor.

The screenshot displays two main windows of the BIOVIA Environmental Monitoring System.

Top Window: Contact Plate Configuration

- Header:** HOME, EM, IM, REPORTS, ADMIN, Search.
- Left Sidebar (Administration):**
 - System
 - IM
 - EM
 - Sampling Plans**
 - Sample Types** (selected)
 - ID Tests
 - Organism
 - Rooms
- Main Content:**
 - Contact Plate**: Agar 55mm surface sampling plates, Status: Active, Location Type: Sampling Point, Version: 18.
 - Properties** tab (selected): Information, ID Results.
 - Table:**| Name | Type | Value | Description | Attributes |
| --- | --- | --- | --- | --- |
| Sample Taken | Boolean (True/False) | True | | |
| Sample Time | Date and Time | | Use Current Date and Time: False | |
 - Buttons:** Qualification Report, History, Add Property, Manage Tabs, Edit Workflow (circled in red).

Bottom Window: Workflow Editor

 - Header:** HOME, EM, IM, REPORTS, ADMIN, Search.
 - Left Sidebar (Actions):**
 - User Defined
 - Accelrys LES Session Complete
 - Approve
 - Print Label
 - Waste
 - Main Content:**
 - Contact Plate Workflow**: History, Add State, Reorder, Save Workflow, Cancel.
 - Scheduled**: DRAG ITEMS INTO HERE, Add (+), Delete (-), Rename.
 - Sampled**: DRAG ITEMS INTO HERE, Add (+), Delete (-), Rename.
 - Approved**: DRAG ITEMS INTO HERE, Add (+), Delete (-), Rename.

Launching the Workflow Editor

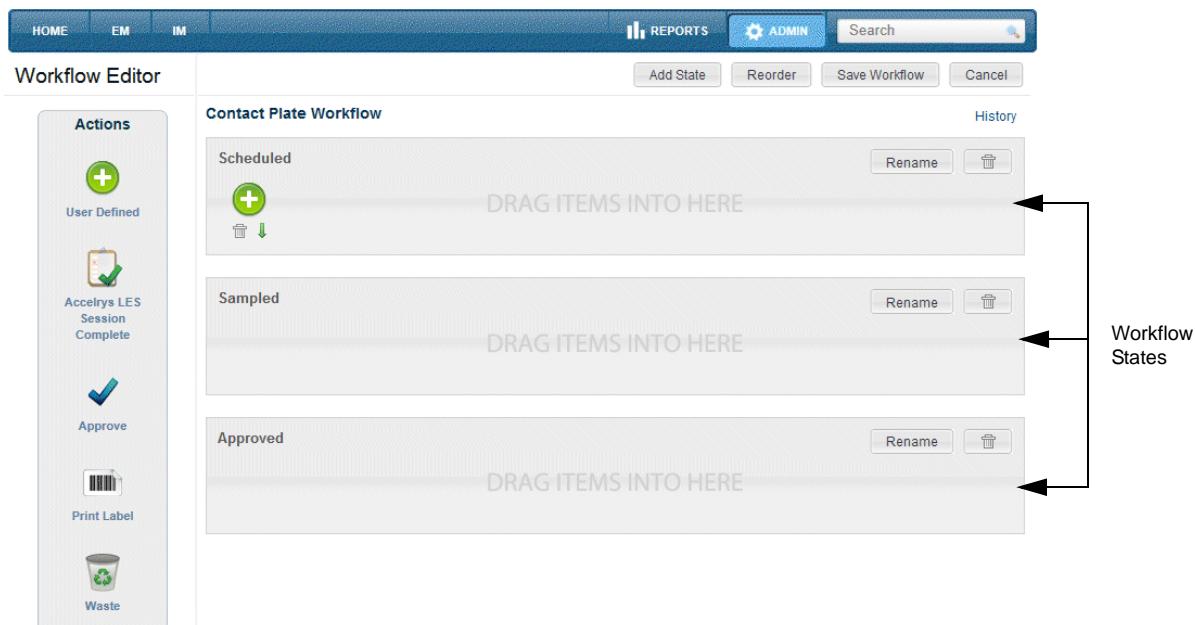
The following sections explain the default workflow and the states, actions, and activities configured in a workflow.

5 Configuring Workflows for Sample Types

The Default Workflow for Sample Types

Every Sample Type defined in the system has an underlying workflow associated with it. Each workflow state in the Workflow Editor is represented by a gray horizontal panel that is essentially a container for the actions and activities which will define that state. When you create a new Sample Type, its default workflow contains three states that provide a starting point for configuring the unique workflows of your Sample Type:

- Scheduled
- Sampled
- Approved



Default Workflow States for a Sample Type

The workflow states are executed from top to bottom. The first state is the default state of the sample when it is released into the system (typically “Scheduled”). The last state marks the end of the sample’s life cycle in the system (typically “Completed” or “Approved”). You can reorder the workflow states as necessary to change the order in which the workflow is executed.

Configuring Workflow States

You can create new states or modify the default states as necessary. You can also reorder the workflow states to change the order in which the workflow is executed.

How workflow states are represented in the user interface

During execution of the workflow, the states correspond to the current status of the sample. The status changes each time the sample enters a new workflow state. The status is displayed in the following areas of the user interface:

- Samples home page
- Sample's View page

Workflow States (Status)

Samples View Page (Top Screenshot):

Contact Plate
Controlled Area
Controlled Area » Routine » CP01 Clean
Sample ID: 120926304
Sampled User: No sampled user specified.
Agar 55mm surface sampling plates

Name	Value
Sample Taken	True
Sample Time	10/29/2012 9:43:45 AM

Samples List Page (Bottom Screenshot):

		Id	Name	Sample ID	Status	Group ID	Location
<input checked="" type="checkbox"/>		1189646	Controlled Area	120926304	Awaiting Full ID	1189331	CP01
<input checked="" type="checkbox"/>		1189923	Controlled Area	120926308	Awaiting Full ID	1189331	CP05
<input checked="" type="checkbox"/>		1258222	Controlled Area	161112074 532	Awaiting Full ID	1258217	CR15
<input checked="" type="checkbox"/>		1258253	Controlled Area	161112074 546	Awaiting Full ID	1258217	SR10
<input checked="" type="checkbox"/>		1258513	Controlled Area	161112074 717	Awaiting Full ID	1258508	CR15
<input checked="" type="checkbox"/>		1258544	Controlled Area	161112074 731	Awaiting Full ID	1258508	SR10

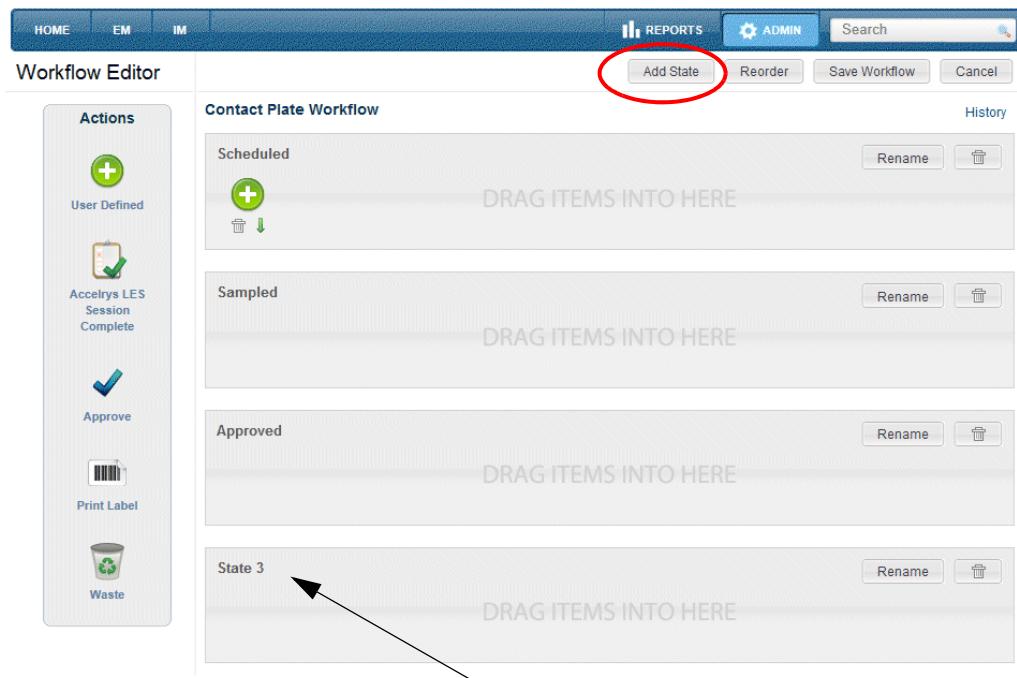
Workflow States as Represented During Workflow Execution

5 Configuring Workflows for Sample Types

Adding states to a workflow

To add a new state to the workflow:

- 1 Click the **Add State** button at the top of the Workflow Editor. A new empty state is placed in the last (lowest) position in the workflow. The new state is named “State *N*” by default, where *N* is numbered sequentially (for example, State 2, State 3, etc.).



Adding a Workflow State

- 2 Click **Rename** in the right corner of the selected state's gray panel. A text box opens and displays the current name.
- 3 Type a new name. The names of workflow states must be unique.



Renaming a Workflow State

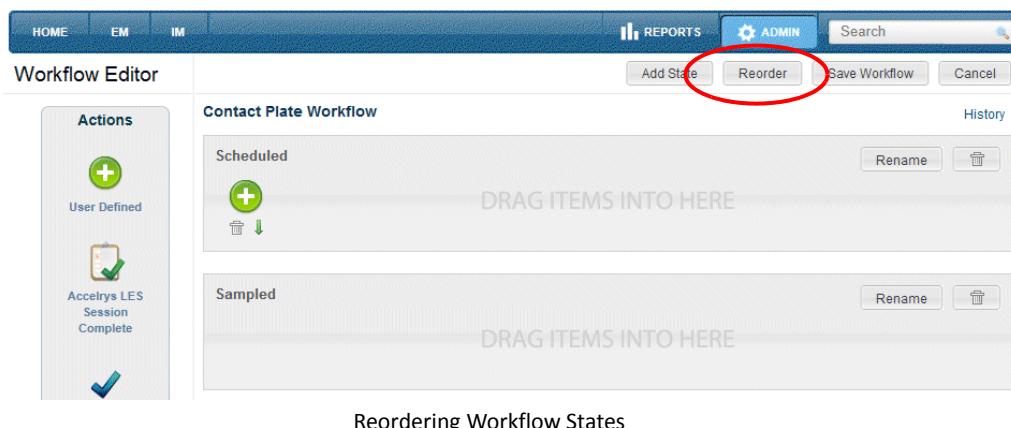
- 4 Click **Save**.
- 5 Click **Save Workflow** at the top of the page to commit the changes.
- 6 Select the relevant actions in the toolbar and drag them into the state. The actions are described in *Configuring Workflow Actions* on page 5-17.

Reordering the sequence of workflow states

The order of the states determines the sequence in which the workflow is executed. The top (first) state is the “start” state of the sample when it is released into the system.

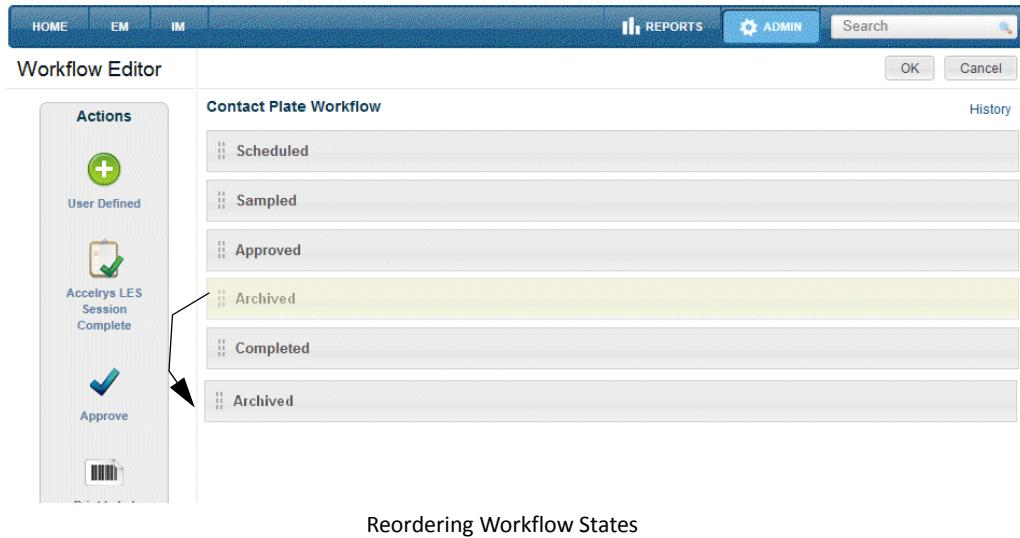
To reorder the position of the workflow states:

- 1 Click the **Reorder** button above the workflow editor.



- 2 In the collapsed view of the states, drag and drop the selected state to its new location.

5 Configuring Workflows for Sample Types



Reordering Workflow States

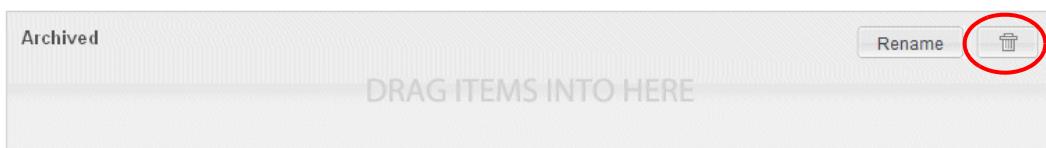
3 Do one of the following:

- If the order is correct:
 - a. Click **OK** to expand the workflow editor with the re-ordered states.
 - b. Click **Save Workflow** at the top of the page to commit the changes.
 - c. In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.
- If the order is not correct, click **Cancel** to revert back to the original order.

Deleting states from a workflow

To delete a workflow state:

- 1 Click **Delete**  in the right corner of the state's gray panel.
- 2 At the prompt, click **OK** to confirm the deletion, or **Cancel** to cancel the deletion.

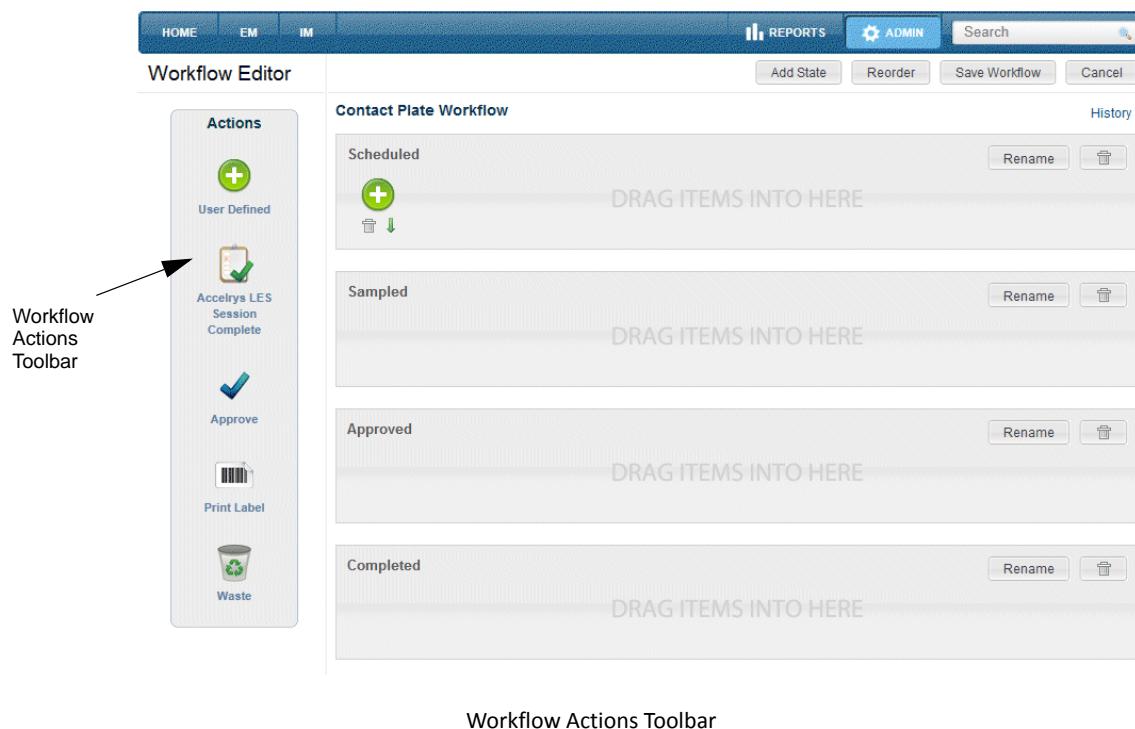


Deleting a Workflow State

- 3 To commit the changes, click the **Save Workflow** button at the top of the page.
- 4 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password.

Configuring Workflow Actions

Workflow *actions* determine what types of actions the user can perform on a sample at each stage of its workflow. The Actions toolbar contains the available actions available for configuring the workflow. To add an action to the workflow state, simply drag its icon into the state.



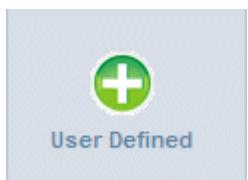
Workflow Actions Toolbar

Description of workflow actions

The following actions are available in the Actions toolbar for the EM module:

- User Defined
- Accelrys LES Session Complete
- Approve
- Waste

User Defined action

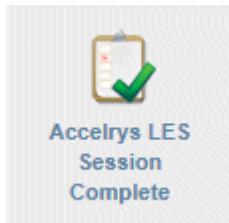


A **User Defined** action is used to define your own workflow action. The workflow for a Sample Type primarily consists of User Generated actions. You can add multiple User Generated actions in the same state and they can be configured with any type of activity.

When the sample enters the state that contains a User Defined action:

- A **User Defined** icon  is displayed in the first column of the grid in the *Samples* home page.
- A command button named for this action is displayed in the sample's *View* page and also above the grid in the *Samples* home page when group workflow actions are available for a group of samples.

Accelrys LES Session Complete action



The **Accelrys LES Session Complete** action is used to release a BIOVIA LES procedure session that can be executed in order to identify CFUs that have exceeded the sample's Action Limit.

The Accelrys LES Session Complete action should only contain an **Accelrys LES Procedure** activity (page 5-27) and a **Set State** activity (page 5-51) to change the workflow state once the procedure session has completed (for example, from "Requires ID" to "ID Under Test"). The Accelrys LES Procedure activity triggers the state change when the procedure session status matches the selected complete status (typically "Completed").

Approve action



An **Approve** action is used in a workflow state that requires an approval. It should include an **E-Signature** activity (page 5-35) set to “Approve” and a **Set State** activity (page 5-51) to change the workflow state upon approval. You can only add one Approve action per state.

When the sample enters the state that contains an Approve action:

- The **Approve** icon is displayed in the grid in the *Samples* home page.
- An “Approve” command button is displayed in the sample’s *View* page and also above the grid in the *Samples* home page when group workflow actions are available for a group of samples.

Waste action



The **Waste** action is can be used in the last state of the workflow and marks the end of the sample's life cycle in the system. The Waste action should include a **Set State** activity and may also contain an **E-Signature** activity for the purpose of approving the action.

When the sample enters the state that contains a Waste action:

- The **Waste** icon is displayed in the *Sample* home page for this sample.
- A “Waste” command button is displayed in the sample’s *View* page.

5 Configuring Workflows for Sample Types

How workflow actions are represented in the user interface

During execution of the workflow, the actions correspond to the command buttons that appear in the following pages of the user interface.

- Sample's View page
- Samples home page (for group workflow actions)

The command buttons change each time the sample enters a new workflow state. In addition, workflow actions also correspond to the first column of "action" icons in the *Samples* home page. The order in which they appear is determined by the order of the actions within the workflow state.

The diagram illustrates the representation of workflow actions in the Biovia Environmental Monitoring System. It consists of two parts:

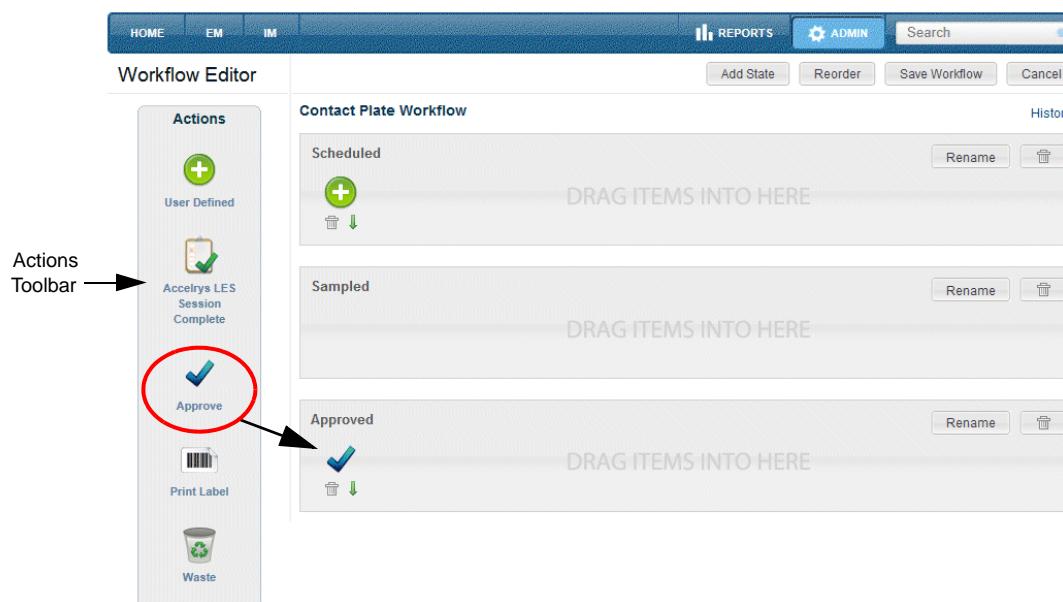
- Top Screenshot:** Shows the 'Samples' view for a specific sample named 'Controlled Area'. At the top right, there are three buttons: 'Enter ID Result', 'Amend CFU Count', and 'New ID Test'. These buttons are circled in red. An arrow points from this red circle to an oval labeled 'Workflow Actions'.
- Bottom Screenshot:** Shows the 'Samples' home page with a grid of samples. The first column of each row contains an icon representing a workflow action. The first five rows of this column are circled in red. An arrow points from this red circle to the same 'Workflow Actions' oval.

Workflow Actions as Represented During Sampling

	ID	Name	Sample ID	Status	Group ID	Location
<input checked="" type="checkbox"/>	1189646	Contact Plate	120926304	Awaiting Full ID	1189331	CP01
<input checked="" type="checkbox"/>	1189923	Settle Plate	120926308	Awaiting Full ID	1189331	CP05
<input checked="" type="checkbox"/>	1258222	Air Sample	161112074 532	Awaiting Full ID	1258217	CR15
<input checked="" type="checkbox"/>	1258253	Swab Plate	161112074 546	Awaiting Full ID	1258217	SR10
<input checked="" type="checkbox"/>	1258513		161112074 717	Awaiting Full ID	1258508	CR15

Adding an action to a workflow state

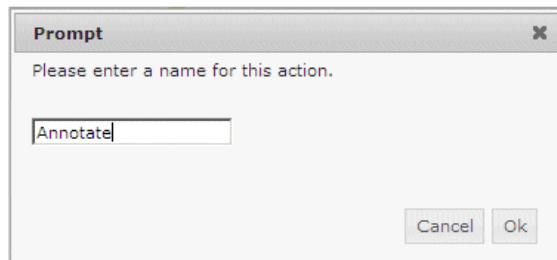
To add an action to a workflow state, drag the action icon from the toolbar into the state.



Adding an Action to a Workflow State

Note the following:

- When you add a “User Defined” action, a dialog box prompts you to enter a name. You can use as many “User Defined” actions in a single state as long as their names are unique.



Adding a “User Defined” Action

- If there are other actions present in the workflow state, the new action is automatically appended to the right of the other icons.

5 Configuring Workflows for Sample Types

- You can only drag one Approve, Accelrys LES Session Complete, and Waste action into the same state. If you attempt to drag an action that already exists, it snaps back to the toolbar.
- When you mouse over an action icon, the name of the action is displayed.



Identifying Workflow Actions within a State

Reordering actions within a state

You can drag and drop the action icons to reorder them. Their positions in the state will reflect the order of the command buttons in the sample's *View* page as well as the action icons in the grid of the *Samples* home page (on page 5-20).

- You cannot reorder an action if the Activities sub-menu is open below it.
- You must click the **Save Workflow** button above the workflow editor to commit the changes.
- The new order of actions does not affect the existing entities.

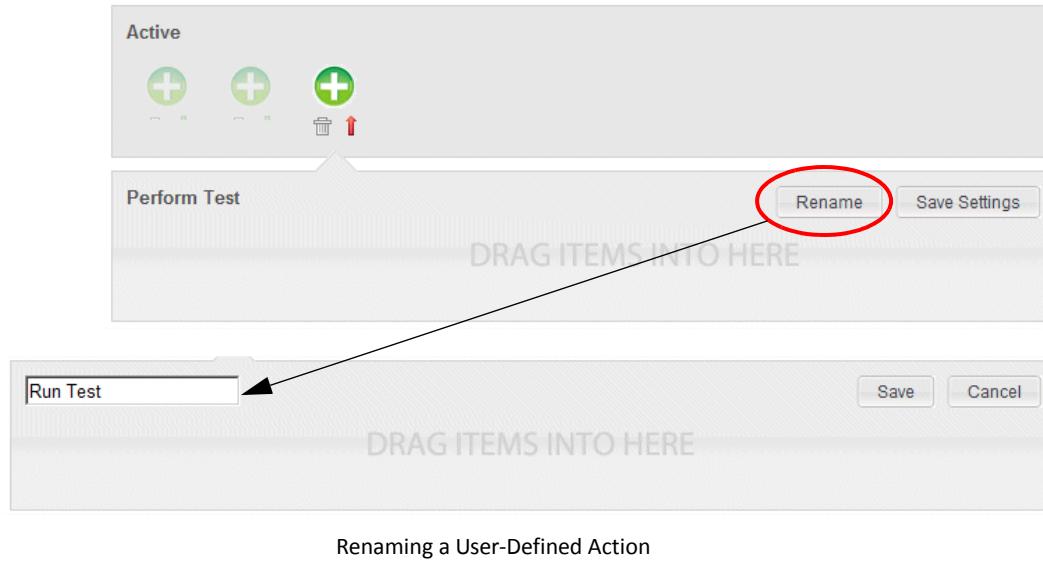
When you click **Cancel**, the reordered actions will revert to their original positions.

Renaming a “User-Defined” action

To rename a User-Defined action:

- 1 Click the action's green down arrow icon to open the Activities panel.
- 2 Click **Rename** and enter a new name for the action.
- 3 Click **Save** to commit the changes to the workflow state.
- 4 Click **Save Workflow** above the Workflow Editor to save the workflow.
- 5 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog is does not appear for Sample Types whose status is "Draft."

Note: When you rename a User-Defined action, the change does not apply to existing entities.



Renaming a User-Defined Action

Copying an action to a different workflow state

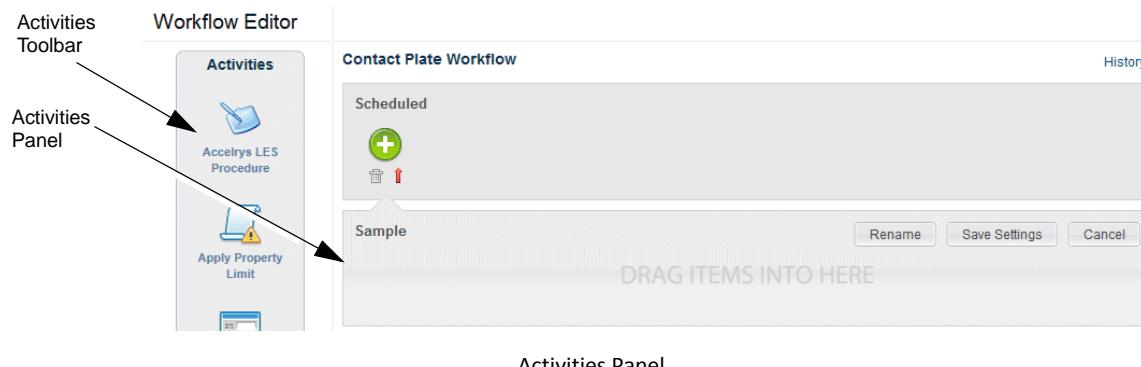
When you drag a workflow action from one state to another, its activities and configured parameters are also copied to the new state. You will be prompted to confirm the copy action.

Deleting a workflow action

To delete an action from a state, click **Delete** below the action's icon. You will be prompted to confirm the deletion.

Configuring Workflow Activities

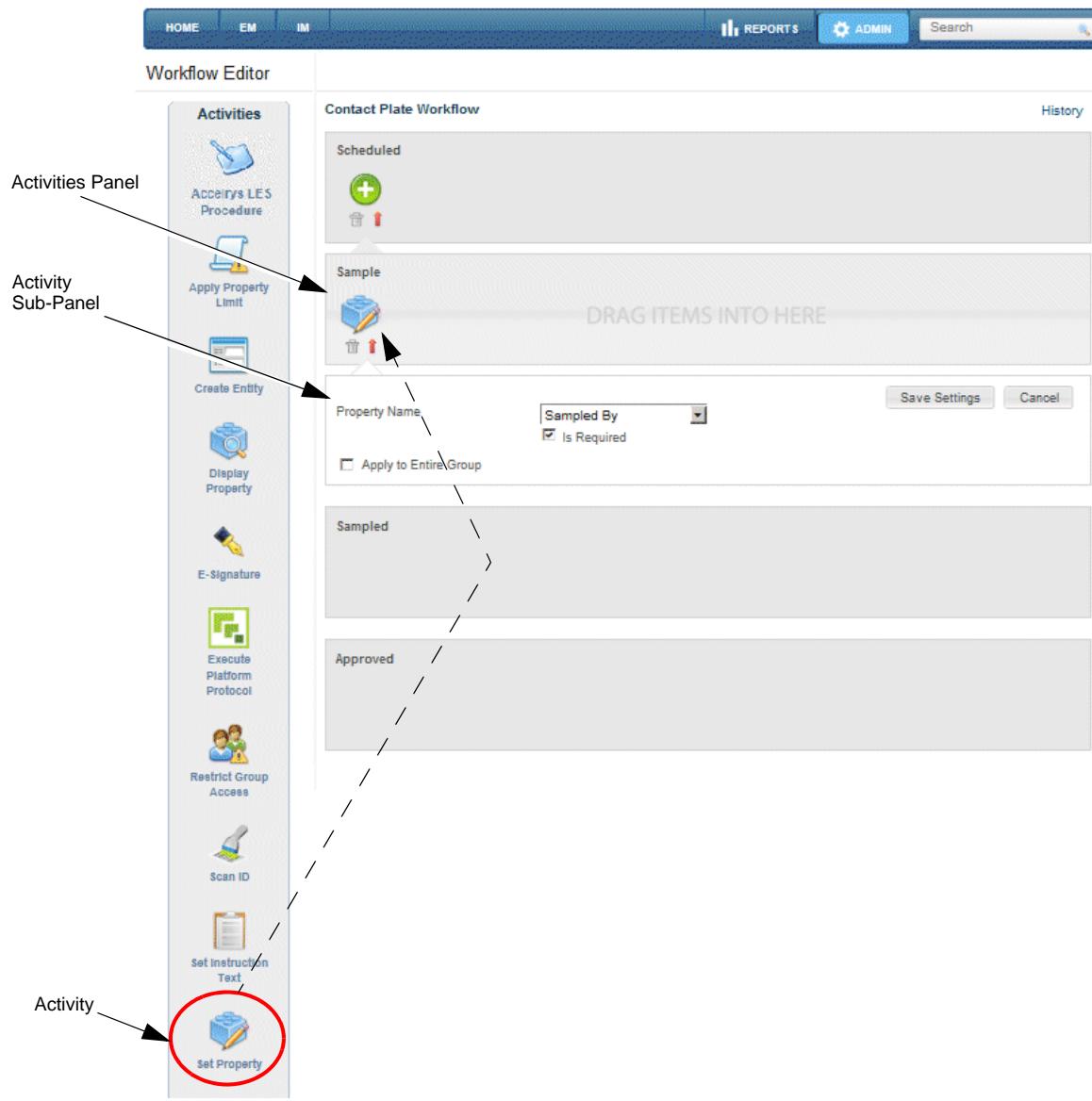
When you click the green down arrow under the action's icon, an Activities panel opens below and the Action toolbar is replaced by the Activities toolbar.



Activities Panel

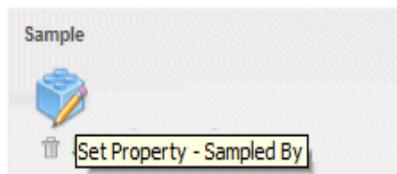
5 Configuring Workflows for Sample Types

To configure an action, drag and drop the required activities into the activity panel. Some activities contain additional configuration parameters. These are displayed in the activities configuration panel below.



Adding Workflow Activities to an Action

- When you mouse over an activity icon, its configured value is displayed.



Identifying Configured Activities within an Action

You can change the order of the icons. The position of the activities within the action determines the sequence in which they appear to the user in the action's dialog during workflow execution.

The top screenshot displays a dialog box titled "Amend CFU Count: CP01 Clean (12096304)". It contains fields for "Modified" (set to False) and "Comment". Arrows point from the text "Set Instruction Text Activity" to the "Modified" field and from "Other Workflow Activities" to the "Comment" field. The bottom screenshot shows a sample details page with the "Amend CFU Count" button circled in red. A callout arrow points from this button to the "Action" dialog box shown above.

"Action" Dialog During Workflow Execution

5 Configuring Workflows for Sample Types

The “action” dialog is named for the appropriate action (for example, “Sample”). Note that the **Set Instruction Text** activity is always displayed at the top of the dialog regardless of where it is positioned in the action. The remainder of the activities are listed below. The activity that is in the farthest left position of the workflow action appears first or at the top of the list, followed by the other configured activities (from left to right).

About group workflow activities

When a group of samples is selected during workflow execution, the values collected by some activities can only be applied to each individual samples in the group (for example, a Print Label activity with a unique barcode will be executed for each sample in the group). Other activities will apply the collected value to all of the samples in the group (for example, an E-Signature activity for approval purposes). For workflow actions consisting of both “single” and “group” activities, the single activities are applied to each individual samples within the group and the group activities are applied to all of the samples in the group.

To apply the value to the entire group of samples, each sample must be based on the same Sample Type that is at the same version of its workflow, and must reside in the same workflow state (that is, have the same status). In addition, several activities can be configured for either single or group data collection.

- **“Single” activities**

For workflow actions consisting of “single” activities, the system presents a separate dialog for each sample in the group. This “action” dialog is named for the appropriate action (for example, Print Label) and the user enters the appropriate information in each dialog. The system then executes the activity and assigns the collected value(s) to the appropriate sample in the group.

The following workflow activities are considered “single” activities:

- Print Label
- Create Entity
- Scan ID

- **“Group” activities**

For workflow actions consisting of “group” activities, the system provides a single action dialog for all of the samples in the group. The user enters the appropriate information, then the system executes the activity and assigns the collected value to all of the samples in the group in a single step.

The following workflow activities are considered “group” activities:

- Accelrys LES Procedure
- E-Signature
- Set Instruction Text
- Apply Property Limit

- Restrict Group Access
 - Execute Platform Protocol
- Either “group” or “single” activities
 - The following workflow activities can be configured for either “single” or “group” workflow activities. For example, a group of sample plates is put into the incubator, removed from the incubator, and read as a group. The Incubator ID is recorded once and applies to all of the samples in the group. Individual values such as CFU Count are recorded individually for each sample in the group.
 - Display Property
 - Set Property
 - Set State—When at least one activity in the action is set to “group.”

Description of workflow activities

The activities available in the Activities toolbar include:

- | | |
|--|--|
| <ul style="list-style-type: none">• Accelrys LES Procedure• Apply Property Limit• Create Entity• Display Property• E-Signature• Execute Platform Protocol• Restrict Group Access | <ul style="list-style-type: none">• Scan ID• Set Instruction Text• Set Property• Set Sample ID• Set State• Time Trigger |
|--|--|

These workflow activities are described below.

Accelrys LES Procedure activity



The **Accelrys LES Procedure** activity is used in conjunction with the Accelrys LES Session Complete action. The Accelrys LES Procedure activity specifies which BIOVIA LES procedure to run to identify the nature of colony forming units (CFUs) that have exceeded the action limit for a sample.

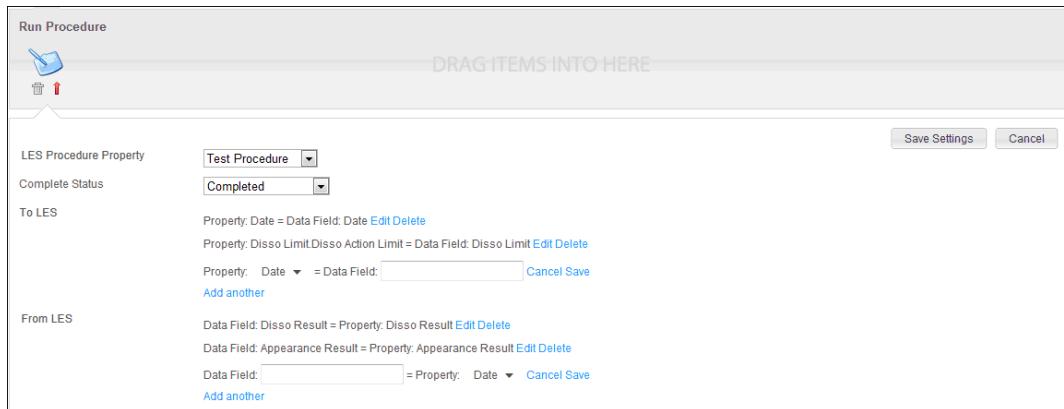
The Accelrys LES Procedure activity is typically added to a “Requires ID” action. It allows you to “link” the property for the Bacteria CFUs, Mold and Yeast CFUs, or the Total CFUs to an identification result field in the BIOVIA LES procedure session.

Once the appropriate test have been completed and the CFUs have been identified, the LES identification result field sends the value back to the “Identification” property of the sample (for example, e-coli).

5 Configuring Workflows for Sample Types

- The Accelrys LES Procedure activity triggers the workflow state change when the procedure session status changes to the specified status—typically "Completed."
- You can add more than one Accelrys LES Procedure activity per action.
- When performing group workflow actions, the Accelrys LES Procedure activity applies to all of the samples in the group. Refer to *About group workflow activities* on page 5-26.
- When combining the Accelrys LES Procedure activity with any other activity in the same action, the Accelrys LES Procedure activity will always execute last.
- The following properties cannot accept data from BIOVIA LES:
 - Accelrys LES Procedure
 - Relationship
 - Calculate Numeric
 - Calculate Duration
 - Calculate Point in Time
- For Relationship properties, you can select a property from the related sample.
- For Relationship properties set to "Collection," the submenu for the sample only contains the pseudo-property 'Count'. During workflow execution, the value sent to BIOVIA LES will be the total number of samples selected for that property.
- If the property that you are sending to BIOVIA LES includes the time zone in which its value was collected, the activity localizes the value of the corresponding serial date in BIOVIA LES to the collected time zone, regardless of the time zone in which the work is currently being executed.
- If the property that you are sending to BIOVIA LES does not include a time zone (for example, it is legacy data), the activity localizes its value to the time zone of the current BIOVIA LIMS client before it is sent to BIOVIA LES.
- Since BIOVIA LES does not capture time zone data, the activity standardizes the date and time value using the time zone of the current BIOVIA LES client.
- These dates and times will look and behave like data captured without time zone data.
- **Important!** In order to save an Accelrys LES Procedure activity in a workflow, the corresponding Sample Type must be configured with a "Accelrys LES Procedure" type property.

The configuration settings for the Accelrys LES Procedure activity are shown in the following figure.



Configuring the “Accelrys LES Procedure” Activity

- The **To LES** field allows you to map a Sample Type property value to a specified data collection field in a BIOVIA LES procedure session. The target LES field must be of the same type as the field you are mapping to it. For example, a “Date” property must be mapped to a “Date” field in LES.
- The **From LES** field allows you to map a data collection field data in the LES procedure session to a specified Sample Type property in the EM module. The target EM property must be of the same type as the field you are mapping to it. For example, a “Date” field in LES must be mapped to a “Date” property in the EM module.

To configure the Accelrys LES Session Complete activity:

- 1 In the “Accelrys LES Procedure Property” field, select the BIOVIA LES Procedure property. The list contains all of the properties of the type “Accelrys LES Procedure” defined for this Sample Type.
- 2 In the “Complete Status” field, select the status that will trigger the Accelrys LES Session Complete action in the workflow. The selection list contains the following procedure session status codes:
 - Abandoned
 - Approved
 - Completed (default)
 - In Process
 - Reviewed
 - Reviewed + Locked

5 Configuring Workflows for Sample Types

- 3 In the “To LES” field:
 - a. Select the BIOVIA LIMS property whose value will be sent to LES. The selection list contains the names of all of the property types defined in the Sample Type (except Accelrys LES Procedure) and its pseudo-properties “ID” and “Status.”
 - If a Relationship property is set to “Collection,” the submenu contains the pseudo-property “Count.” During workflow execution, the total number of samples selected for that property will be sent to LES.
 - If a Relationship property is not set to “Collection,” the submenu lists the properties of the related Sample Type (excluding Accelrys LES Procedure) and its pseudo-properties “ID” and “Status.”
 - b. Enter the name of the target data collection field in the LES procedure session. The field you select must be of the same type as the field you are mapping to it. Note that if you are pre-defining a new field name to be included in the work instruction, there is a 50-character limit.

Note: Mapping Array Elements

To map LIMS properties to LES array elements, use the following naming convention. The example below maps the LIMS properties “First Name” and “Last Name” to the first and third elements in an array of three names in LES:

First Name = Name(1)
Last Name = Name(3)

- c. Click **Save** to save the edits you made in that row.
 - d. Click **Add another** to add another row below. Repeat Steps 3a-c.
- 4 In the “From LES” field:
 - a. Enter the name of the data collection field in the LES procedure session whose value will be sent back to the LIMS application or modules.
- Note: Mapping Array Elements**
- To map LES array elements to LIMS properties, use the following convention. The example below maps the three elements in the array of three Observation fields to the properties “CFU Yeast, CFU Mold, CFU Total”:
- Observation(1) = CFU Yeast
Observation(2) = CFU Mold
Observation(3) = CFU Total
- b. Select the target property of this Sample Type which will receive the data from LES. The property you select must be of the same type as the field you are mapping to it. (for example, Identification).
 - c. Click **Save** to save the edits you made in that row.

- d. Click **Add another** to add another row below. Repeat Steps 4a-c.
- 5 Click **Save Settings** to save the configured activity.
- 6 Click **Save Settings** to save the configured action.
- 7 Click **Save Workflow** to commit the changes to the workflow.

Apply Property Limit activity



The **Apply Property Limit** activity allows you to apply one or more limits to a specified property of the current Sample Type. The selected property is evaluated against a Limit Specification property of the Sample Type.

Typically you will have several configured Limit Specification properties (for example, an upper limit and a lower limit) and you can evaluate the selected property against more than one.

During workflow execution, an out-of-limit value is flagged so the user can easily identify that a limit has been exceeded when manually entering property values or obtaining test results.

When performing group workflow actions, the Apply Property Limit activity applies to all entities in the group. Refer to *About group workflow activities* on page 5-26.

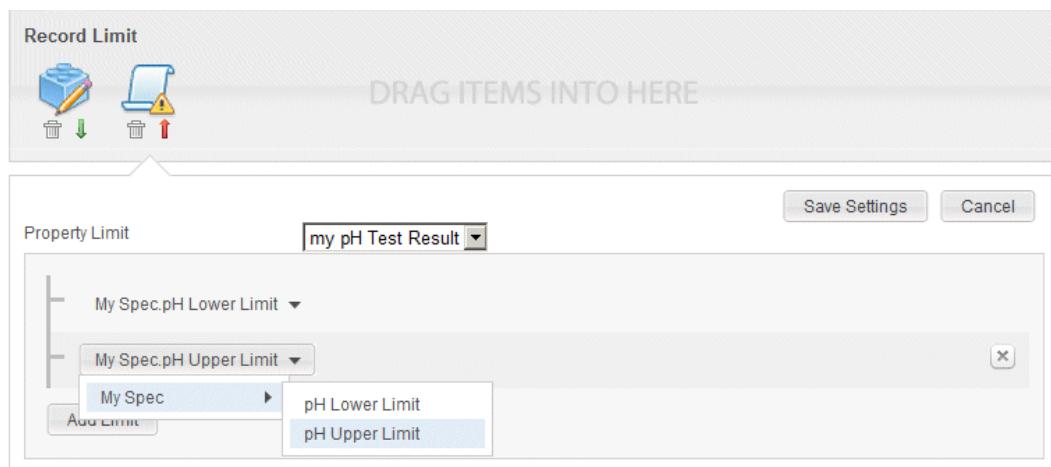
Note the following:

- The state in which you set your Relationship property is where you should apply the limit.
- You can only evaluate one property in each Apply Property Limit activity.
- The Property Limit field displays all of the properties of the current Sample Type as well as the Relationship properties of the related Entity Types.
- The limit fields are filtered according to the selected property type. For example, numeric limits will not be displayed if you are evaluating a text limit.
- For a numeric limit, the precision of the Limit Specification and the property it is evaluating must be the same.
- If you specify more than one limit, the evaluated property must meet all of the limits. This represents a logical “AND” function.
- If you have two or more Apply Property Limit activities for the same property, the system will apply the most conservative limit. For example, if you had two limits **<4 and >10** and **<3 and >8**, the system would apply the limit **<4 and >8**.

5 Configuring Workflows for Sample Types

- During workflow execution, if the limit being applied to the property is set up in the workflow as a “By Value” relationship, the property is evaluated against the version of the Limit Specification at the time the Apply Limit Activity was executed.
- During workflow execution, if the limit being applied to the property is set up in the workflow as a “By Reference” or “By Reference, Clone” relationship, the property is evaluated against the most current version of the Limit Specification.
- During workflow execution, if the limit being applied is specified through a Relationship property and the relationship is changed, the properties being evaluated by the Apply Limit Activity will need to be re-evaluated. This does not happen automatically, therefore the workflow must include an Apply Limit Activity each time there is a Set Property on the limit relationship.

The Apply Property Limit configuration panel is shown below.



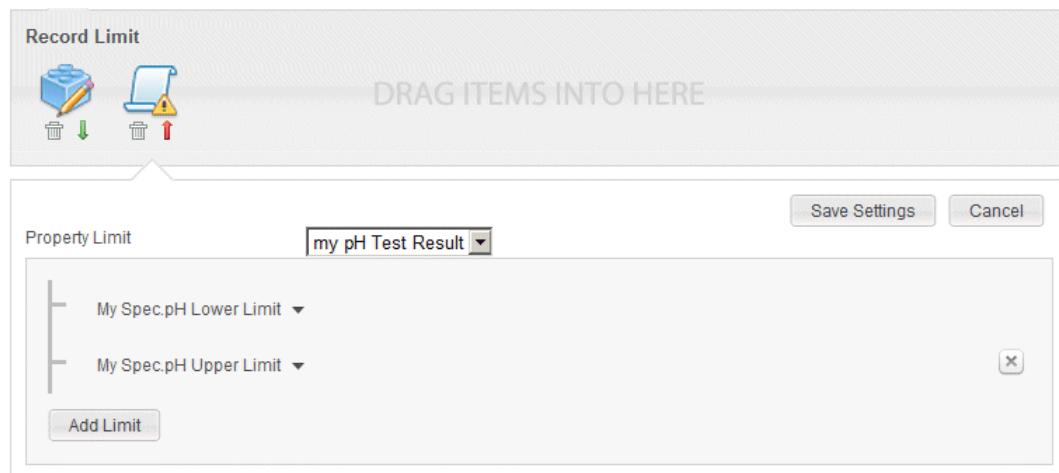
Configuring the “Apply Property Limit” Activity

To configure the Apply Property Limit activity:

- 1 In the Property Limit field, select the property to which you want to apply a limit. Note that “By Ref, Clone” Relationship properties do not appear in the list. For Relationship properties, the menus are nested as shown above.
- 2 In the selection list, choose the Limit Specification property that you want to evaluate against the selected property.
- 3 If necessary, click **Add Limit** to specify an additional limit.
- 4 Repeat Steps 2-3 as required.
- 5 When you are done, click **Save Settings** to save the configured activity.

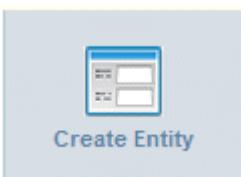
- 6 Click **Save Settings** to save the configured action.
- 7 Click **Save Workflow** above the Workflow Editor to commit the changes.

The configured Apply Property Limit is shown below.



Configuring the “Apply Property Limit” Activity

Create Entity activity



The **Create Entity** activity allows the user to create an instance of a specified Entity Type from the workflow of a sample. For example, a test (that is, an instance of a “Test” Entity Type) could be automatically created when a sample is taken.

The Create Entity activity is defined by a target Entity Type and a default “Create” action. When a new entity instance is created during workflow execution, the ID of its parent Entity Type is displayed in the grid of entity instances.

Note the following:

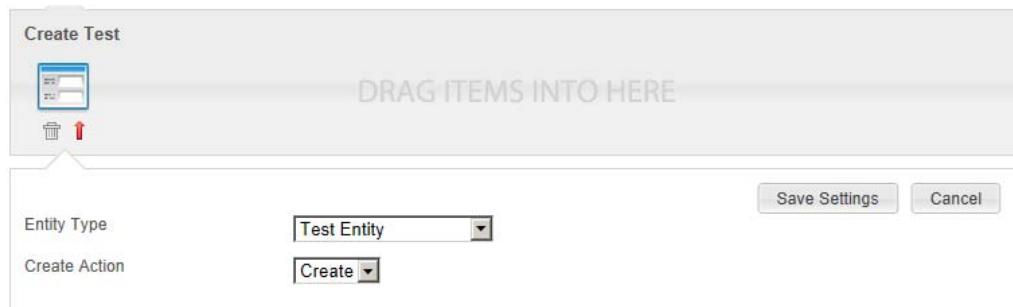
- You can only add one Create Entity activity to a workflow action.
- The Create Entity activity cannot be combined with other activities that require user input, such as an Accelrys LES Procedure, Set Property, or E-Signature activity.

When performing group workflow actions, the Create Entity activity applies to each individual entity instance in the group. Refer to *About group workflow activities* on page 5-26.

To configure the Create Entity activity:

5 Configuring Workflows for Sample Types

- 1 In the Entity Type field, select the Entity Type on which the new entity instance will be based. The list contains all of the active Entity Types in the system.



Configuring the “Create Entity” Activity

- 2 In the Create Action field, select **Create**.
- 3 Click **Save Settings** to save the configured activity.
- 4 Click **Save Settings** to save the configured action.
- 5 Click **Save Workflow** above the Workflow Editor to commit the changes.

Display Property activity



The **Display Property** activity allows you to display a property value without allowing it to be edited. The Display Property is closely related to the Set Property activity in that Set Property collects the value and allows the user to edit it, whereas the Display Property simply displays the collected value and it cannot be edited.

When performing group workflow actions, the “Apply to Entire Group” option allows you to apply the Display Property activity to either individual actions (that is, per sample) or to the entire group. Refer to *About group workflow activities* on page 5-26.

To configure the Display Property activity:

- 1 In the Property Name field, select the property that you want to display on the action form. The list contains the names of the properties that can be configured for this Sample Type.

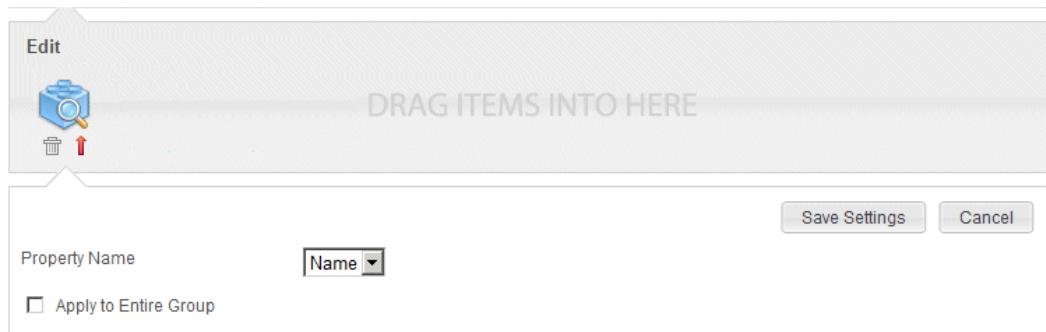
2 In the **Apply to Entire Group** field:

- Leave the box unchecked to display the individual values for each sample during group workflow actions. A separate *Action* dialog will be applied to each sample in the group.
- Check the box to apply the entered values to all of the entities during group workflow actions. A single *Action* dialog will be applied to all samples in the group.

3 Click **Save Settings** to save the configured activity.

4 Click **Save Settings** to save the configured action.

5 Click **Save Workflow** above the Workflow Editor to commit the changes.



Configuring the “Display Property” Activity

E-Signature activity



The **E-Signature** activity is used to collect an electronic signature during workflow execution. The purpose of the signature can be to review, attest, approve and action, or provide an annotation—for example, to explain why a sample has been cancelled.

When performing group workflow actions, the E-Signature activity applies to all samples in the group. Refer to *About group workflow activities* on page 5-26.

The E-Signature activity provides the following types of signatures:

- **Annotate**—Collects the user’s e-signature for an annotation. The Reason Code “Annotation” is pre-defined by the system.
- **Approve**—Collects the user’s e-signature for an approval. The Reason Code “Approved” is pre-defined by the system.

5 Configuring Workflows for Sample Types

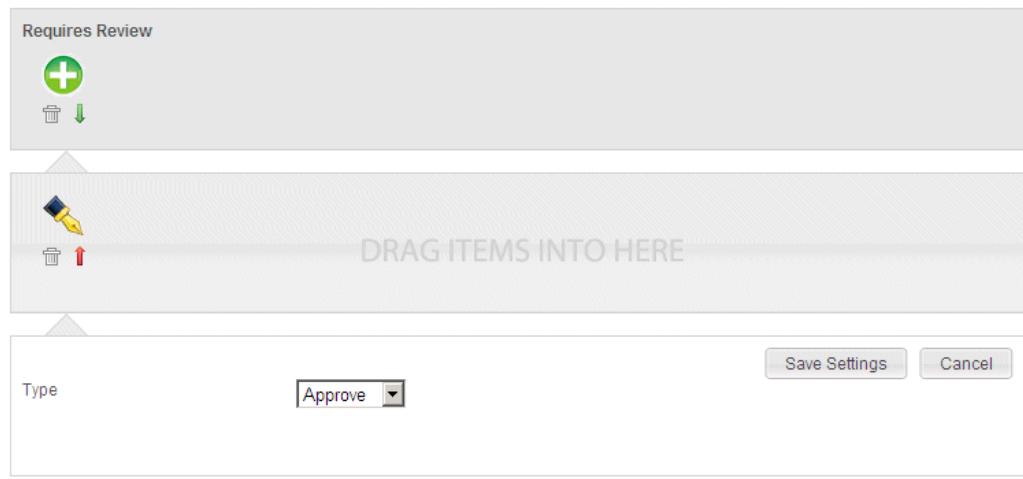
- **Attest**—Collects the user's e-signature for an attestation. The Reason Code "Attested" is pre-defined by the system.
- **Review**—Collects the user's e-signature for a review. The Reason Code "Reviewed" is pre-defined by the system.
- **Signature**—Collects the user's e-signature for any reason. The Reason Code that is recorded for this activity is entered by the user.

Note the following:

- You can only add one E-Signature activity per workflow action.
- You cannot add an E-Signature (Approve/Attest/Review) activity to an action that contains another E-Signature (Approve/Attest/Review), Set Location, Set Quantity, Set Expiration, Set Property, Create Entity, or Time Trigger activity.
- To allow the user to add an annotation in a workflow action that also contains an E-Signature (Approve/Attest/Review) activity, create a User Defined action called "Annotation" and include the e-Signature activity set to "Annotation."

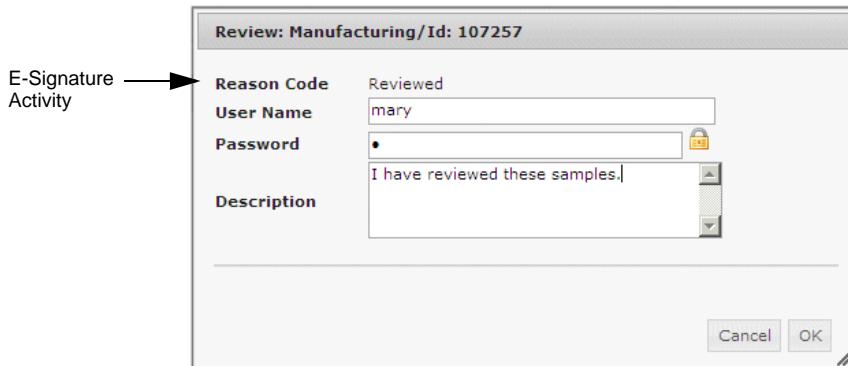
To configure the E-Signature activity:

- 1 Select the type of signature required for the action.



- 2 Click **Save Settings** to save the configured activity.
- 3 Click **Save Settings** to save the configured action.
- 4 Click **Save Workflow** above the Workflow Editor to commit the changes.

During workflow execution, the configured E-Signature activity presents a dialog for the user's e-signature.



"E-Signature" Activity during Workflow Execution

Execute Platform Protocol activity



The **Execute Platform Protocol** activity allows users to execute a protocol on a configured platform protocol server (such as the Accelrys Enterprise Platform Server) during workflow execution. The Execute Platform Protocol activity passes specified parameters to the specified protocol, which then returns the requested data. The Accelrys Platform Server is configured in the administration's System Settings.

The Execute Platform Protocol activity supports both synchronous and asynchronous communication between the protocol server and BIOVIA LIMS.

- Synchronous transmissions return the requested data immediately—for example when the specified protocol is to run a report, the workflow waits for the report to be returned.
- For an asynchronous transmission, the workflow will not wait for a response—for example, when the protocol initiates an email to another system.

Note the following:

- You cannot add an Execute Platform Protocol activity to a Zero State action.
- You can add more than one Execute Platform Protocol activity to a workflow action.

5 Configuring Workflows for Sample Types

- If other activities are included in the action that contains the Execute Platform Protocol activity, all of the activities are executed.
- If the protocol returns an HTML file, the user is redirected to the loaded page in a new browser window.
- If the user leaves a required parameter blank, the activity cannot be saved.
- When performing group workflow actions, if the Execute Platform Protocol activity is in the same action as another activity that requires user input (for example, Set Property), the other property must be configured to “Apply to Group,” in order for the protocol activity to be executed.
- When performing group workflow actions, if the Execute Platform Protocol activity is in the same action as a “Create Entity” activity, the protocol will be executed once the instances are created. However, if this protocol generates any files (for example, reports), the files are not displayed in a new window because the browser is redirected to the filtered view of the children entities once they are created.
- In order to successfully process a protocol during workflow execution, your browser’s Pop-up Blocker Settings must be configured to “Allow pop-ups” from the BIOVIA LIMS site address.
- You can automatically execute a protocol with a time trigger or LES Session Complete trigger. Refer to the following section.

Executing Platform Protocols Activities from Triggered Actions

You can execute a Platform Protocol activity automatically from an action that contains a Time Trigger activity as well as from an LES Session Complete action.

- The protocol that is selected to be executed from a time trigger must require no user input.
- Any output that is displayed by the protocol, such as a new page, will not function as expected, as there is no terminal associated with triggered actions.
- For protocols that are executed from a time trigger, it is recommended to leave the “Asynchronous Execution” box unchecked. If this box is checked, it is possible to overwhelm the LIMS API with requests when many protocols are triggered at once.

When the trigger executes, the protocol is executed under the following conditions:

- The protocol will have a 30-minute window of time in which to access LIMS API functions. After 30 minutes, the API will reject the requests. If the protocol does not use the LIMS API, the time restriction does not apply.

- Which user is assigned to the protocol's LIMS Terminal Session?

For Time Triggers:

- LIMS will assign the session to the most recent user who set the status to the state which contains the time triggered action.
- If a user did not perform the most recent state change, such as in the case of a time triggered state change, the system will identify the most recent user to cause a state change.
- In the Environmental Monitoring module, it is possible to configure a workflow in which no user initiates a state transition—for example, when samples are created by the system at their scheduled date and all subsequent actions are executed through time triggers. In this case, the “System” user is selected. Since the “System” user has no eligibilities, protocols that are triggered by the system user will be restricted from using the LIMS API. Protocols that do not use the API, such as a protocol that sends an email notification, are unaffected and can be run in this scenario.

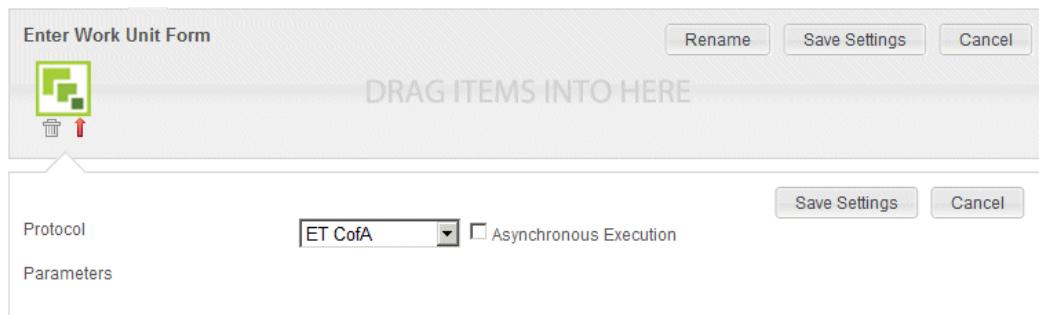
For LES Session Complete triggers:

- LIMS will assign the session to the LES user who completed the procedure session.
- Note that the matching LIMS user must have eligibilities to access or modify entity instances and/or consumables in order for protocols that leverage the LIMS API to be successful.
- When protocols use the LIMS API to modify Entities or Consumables, the resulting Audit Trail Item(s) will record the following:
 - The user as chosen by the method described above.
 - The date and time recorded as UTC.
 - The notes will include the phrase, “Created or modified via automation.”

5 Configuring Workflows for Sample Types

Configuring the Execute Platform Protocol Activity:

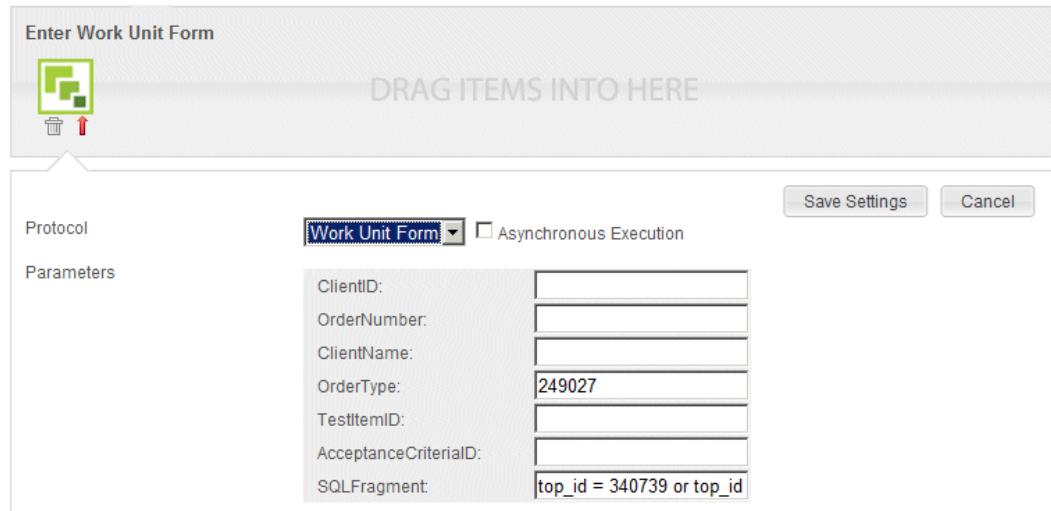
The Execute Platform Protocol activity is shown below.



The screenshot shows the 'Enter Work Unit Form' dialog. At the top, there is a header with 'Enter Work Unit Form' and buttons for 'Rename', 'Save Settings', and 'Cancel'. Below the header is a large text field labeled 'DRAG ITEMS INTO HERE' with a trash can icon. A small arrow points from this field down to the configuration area. The configuration area has sections for 'Protocol' and 'Parameters'. Under 'Protocol', a dropdown menu is set to 'ET CofA' and there is a checkbox for 'Asynchronous Execution'. Under 'Parameters', there is a list of fields: ClientID, OrderNumber, ClientName, OrderType, TestItemID, AcceptanceCriteriaID, and SQLFragment. The 'OrderType' field contains the value '249027', and the 'SQLFragment' field contains the value 'top_id = 340739 or top_id'.

Configuring the “Execute Platform Protocol” Activity

The Protocol selection list displays all of the available protocols that exist in the specified folder on the platform protocol server—for the Accelrys Enterprise Platform Server, the default folder is Protocols/WebCore. Once a protocol is selected, the available parameters for that protocol are displayed.



The screenshot shows the 'Enter Work Unit Form' dialog. At the top, there is a header with 'Enter Work Unit Form' and buttons for 'Save Settings' and 'Cancel'. Below the header is a large text field labeled 'DRAG ITEMS INTO HERE' with a trash can icon. A small arrow points from this field down to the configuration area. The configuration area has sections for 'Protocol' and 'Parameters'. Under 'Protocol', a dropdown menu is set to 'Work Unit Form' and there is a checkbox for 'Asynchronous Execution'. Under 'Parameters', there is a list of fields: ClientID, OrderNumber, ClientName, OrderType, TestItemID, AcceptanceCriteriaID, and SQLFragment. The 'OrderType' field contains the value '249027', and the 'SQLFragment' field contains the value 'top_id = 340739 or top_id'.

Configuring Protocol Parameters

Each parameter displays an input control appropriate for the data type that it accepts. The following parameter data types are displayed with the appropriate controls.

- BooleanType parameter is represented by a check box.

- PasswordType is represented by a password text box (characters are not displayed).
- StringTypes which are configured to have a limited number of "Legal Values" are represented by a selection list where the only options available are the "Legal Values" of the parameter.
- All other data types are represented by a standard text box control.

The following exceptions are made and are not displayed to the user:

- Parameters of type "StylesheetType"
- Parameter named "Entity ID"
- Parameter named "Entity Type"
- Parameter named "Terminal GUID"

Parameters which are marked as "required" in the protocol have an asterisk to the right of the label name.

The user is allowed to enter in values for the available parameters. These values are literal values and cannot be mapped to property values.

To configure the Execute Platform Protocol activity:

- 1 In the Protocol field, select the appropriate protocol.
- 2 To configure an asynchronous request, click the **Asynchronous Execution** check box.
- 3 In the Parameters fields below, configure the required information for the selected protocol.
- 4 Click **Save Settings** to save the configured activity.
- 5 Click **Save Settings** to save the configured action.
- 6 Click **Save Workflow** above the Workflow Editor to commit the changes.

5 Configuring Workflows for Sample Types

Restrict Group Access activity



The **Restrict Group Access** activity allows you to control which groups of users can perform certain workflow actions. This allows you to control the workflow execution and ensures that only the appropriate groups of people can perform specific workflow actions.

To configure the Restrict Group Access activity, you will define one or more "Permission Groups" which are essentially rules for determining which User Groups can execute specific workflow actions.

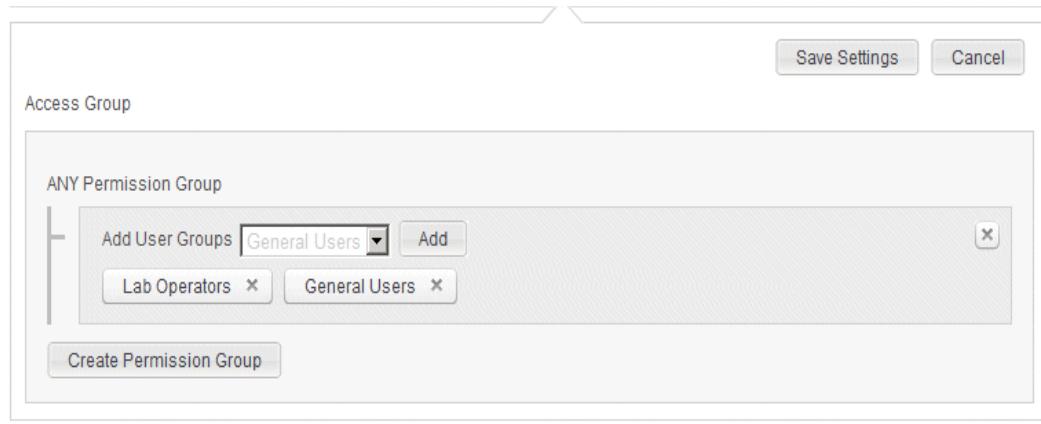
Each Permission Group must contain at least one User Group and can contain many. Users must belong to ALL of the User Groups in any one Permission Group in order to execute the action, thus specifying multiple User Group operates as a logical "AND" function. Each Permission Group is evaluated independently and thus operates as a logical "OR" function. If an action does not have any configured Permission Groups, any user can execute this action.

Note the following:

- You can only add one Restrict Group Access activity to a workflow action.
- You can add the same User Group to different Permission Groups.
- If all of the groups in the Permissions Group become inactive, any user can execute this action.
- When an active Sample Type whose workflow contains a configured Permission Group is exported, the User Group that is used in its workflow is also exported.
- If there are no User Groups currently configured in your system, the Activity Configuration panel is hidden and an error message is displayed.
- When performing group workflow actions, the Restrict Group Access activity applies to all of the samples within the group.

To configure the Restrict Group Access activity:

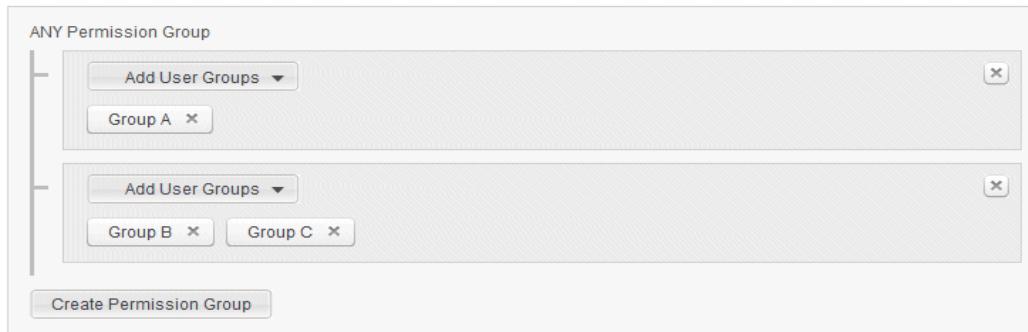
- 1 By default, one empty Permission Group is displayed. If you want to allow anyone to execute this action, do not add any User Groups.
- 2 To restrict this action to a specific group of users, select the group from the list and click **Add**. The list contains all of the active User Groups in the system.
- 3 To further restrict this action, add additional groups as necessary. You can only add one instance of a group to a Permission Group. Only users who belong to all of the added groups will be able to execute this action.



Configuring the “Restrict Group Access” Activity

- 4 To remove an added group, click to the right of its name.
- 5 To add another Permission Group, click **Create Permission Group** and add the appropriate Groups.
- 6 To remove an added Permission Group, click on the right side of its gray panel.
- 7 Click **Save Settings** to save the configured activity. There must be at least one Permission Group per action and at least one User Group per Permission Group in order to save the changes.
- 8 Click **Save Settings** to save the configured action.
- 9 Click **Save Workflow** above the Workflow Editor to commit the changes.

In the example below, user can perform this action if they belong to either Group A or to both Groups B and C.



Example of Configured Permission Groups

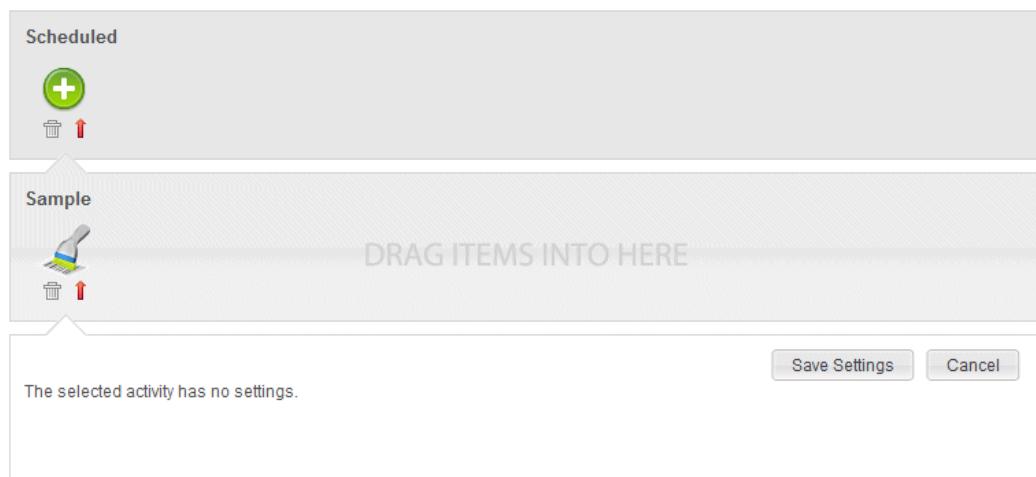
5 Configuring Workflows for Sample Types

Scan ID activity



The **Scan ID** activity is used to scan one or more barcodes during workflow execution. In the Environmental Monitoring system, the Scan ID activity is typically used in a “Sample” action to collect the Sample IDs of the plates being sampled, or in a “Scan Positive” and a “Scan Zero” action when the samples are being read and sorted after incubation. You can only use one Scan ID activity per action. When performing group workflow actions, the Scan ID activity applies to an individual sample in the group. Refer to *About group workflow activities* on page 5-26. The Scan ID activity does not have any further configuration parameters.

Note: A Scan ID activity cannot be added to an action that contains another Scan ID, Set Sample ID, or Time Trigger activity.



During workflow execution, a Scan ID activity allows the user to scan the barcode of one or more samples. Each time a barcode is scanned, the value is recorded, then the Scan Barcode field is cleared and is ready for the next scan.

Set Instruction Text activity



The **Set Instruction Text** activity is used to display some instructions to the user during workflow execution. A Set Instruction Text activity can be used in any workflow action, but you can only add one per action. The instructions apply to all of the activities in the action.

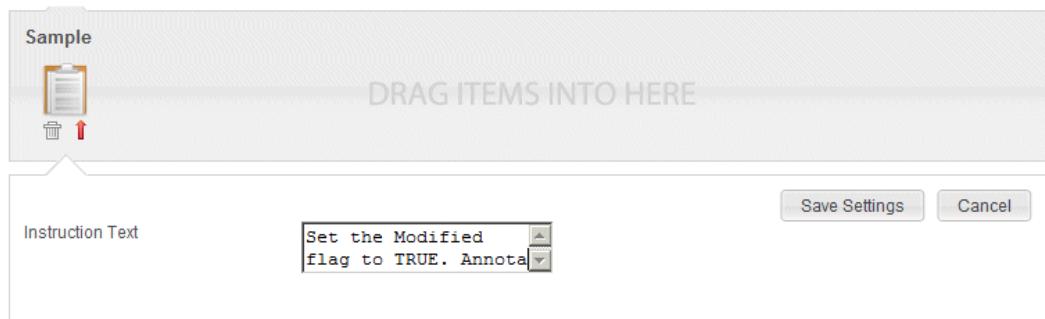
When performing group workflow actions, the Set Instruction Text activity applies to all of the samples in the group. Refer to *About group workflow activities* on page 5-26.

Note the following:

- You can only add one Set Instruction Text activity to a workflow action.
- You cannot add a Set Instruction Text activity to an action that contains a Time Trigger.

To configure the Set Instruction Text activity:

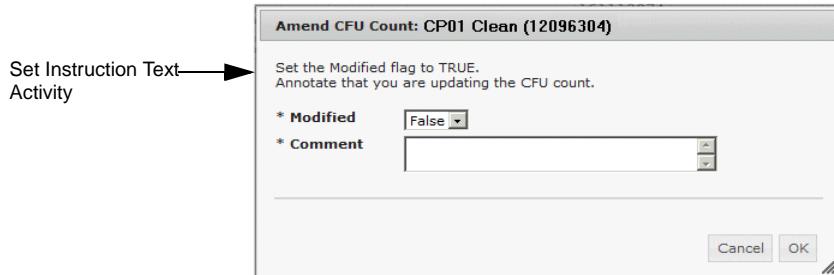
- 1 Enter the instructions in the text box. The instructions cannot exceed 256 characters.
- 2 Click **Save Settings** to save the configured activity.
- 3 Click **Save Settings** to save the configured action.
- 4 Click **Save Workflow** above the Workflow Editor to commit the changes.



"Set Instruction Text" Activity

During workflow execution, the Set Instruction Text activity is always shown at the top of the dialog box that opens when the user clicks a command button. Any other activities that are present in that workflow action are displayed below.

5 Configuring Workflows for Sample Types



"Set Instruction Text" Activity during Workflow Execution

Set Property activity



The **Set Property** activity allows the user to manually enter or select the value of a property for a sample during workflow execution. You can create a Set Property activity for any of the “configurable” properties of an active Sample Type. You can also control at which workflow state the property value is required.

The “Required” option is selected by default and requires that the user enter a value for that property when the sample is executed. The required properties are indicated with an asterisk (*) in the *Sample* action dialog that is displayed when the user starts the sampling.

When you deselect the “Required” option, the field is displayed to the user but a value is not required. You can use the same Set Property activity in two different states of the workflow—one that requires a value and the other that does not.

When performing group workflow actions, the “Apply to Entire Group” option allows you to apply the Set Property activity to either individual actions (that is, per sample) or to the entire group. Refer to *About group workflow activities* on page 5-26.

Note the following:

- You can add multiple Set Property activities per action.
- You cannot add a Set Property activity to an action that contains an E-Signature (Approve/Attest/Review) activity or a Create Entity activity.
- When you configure the Set Property activity for a “Numeric” property, you can specify a default value and optionally allow the user to edit it during workflow execution. Both the specified default value and the entered value must meet the minimum and maximum values that have been configured for the property, if any. If **Allow Edit** is unchecked, only the Default Value can be accepted.

The screenshot shows a configuration dialog for a "Set Property" activity. The "Property Name" dropdown is set to "Number of Samples". The "Default Value" input field contains the value "2". The "Allow Edit" checkbox is unchecked, and the "Is Required" checkbox is checked. A "Save Settings" and a "Cancel" button are visible at the top right.

"Set Property" Activity with Numeric Property

- When you configure the Set Property activity for a "User" property, only the active users with access to the current Site appear in the selection list.
- For upgrades from an existing BIOVIA LIMS v4.1 system, all of the existing Set Property activities are set to "Required" upon importing.

To configure the Set Property activity:

- 1 In the Property Name field, select the name of the property whose value you want to collect. The list is populated with the names of the "configurable" properties of this Sample Type.

The screenshot shows a configuration dialog for a "Set Property" activity. The "Property Name" dropdown is set to "Requalification Date". The "Apply to Entire Group" checkbox is checked, and the "Is Required" checkbox is checked. A "Save Settings" and a "Cancel" button are visible at the top right. Above the dialog is a placeholder area labeled "DRAG ITEMS INTO HERE" with a trash can icon.

"Set Property" Activity

- 2 In the **Is Required** field:
 - Leave the box checked to require the user to enter or select a value for this property during workflow execution.
 - Clear the check box if the value is optional.
- 3 To configure the options for a Relationship property, refer to the following section.

5 Configuring Workflows for Sample Types

- 4 In the **Apply to Entire Group** field:
 - Leave the box unchecked to require the user to enter individual values for each sample during group workflow actions. A separate *Action* dialog will be applied to each sample in the group.
 - Check the box to apply the entered values to all of the entities during group workflow actions. A single *Action* dialog will be applied to all samples in the group.
- 5 Click **Save Settings** to save the configured activity.
- 6 Click **Save Settings** to save the configured action.
- 7 Click **Save Workflow** above the Workflow Editor to commit the changes.

Configuring Set Property activity for a Relationship property

When you select a Relationship property in the Property Name field, you can optionally set one or more conditions on which to evaluate the property. You can build a condition to:

- Compare one property to another property
- Compare a property to a fixed value
- Compare a property to numeric values or dates (<, <=, >, >=, =, and <>)
- Compare a property to a boolean value (true/false)
- Compare two string values (that is, Equal To, Not Equal To, Contains)

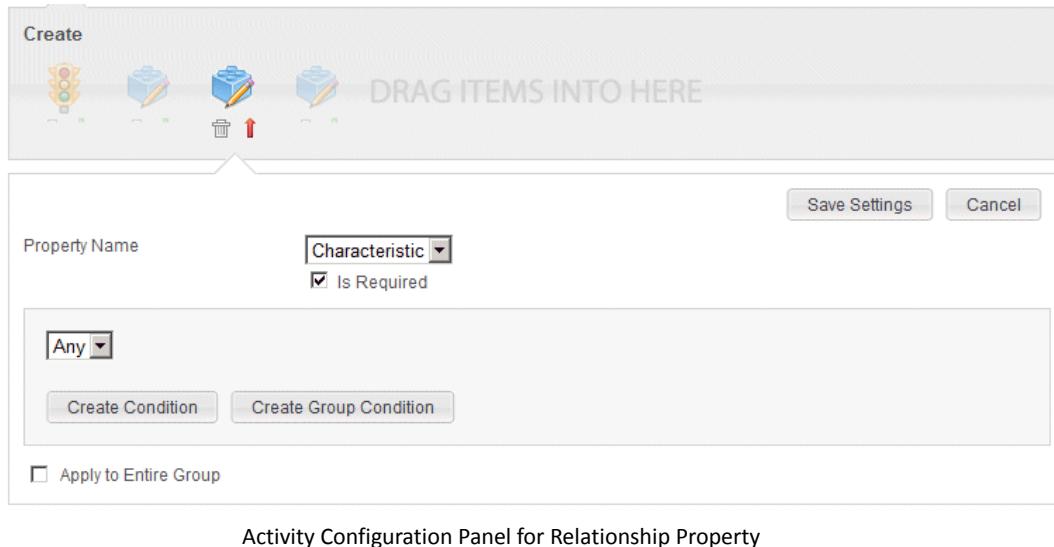
Individual conditions can be grouped into complex conditions by adding one or more group conditions which behave like parenthesis precedence operators. The conditions allow for the following evaluations:

- **Any**—If any of the statements are true (an "OR" evaluation).
- **All**—If all of the statements are true (an "AND" evaluation).

You can set the filters for each condition based on the properties of the Entity Type referenced in the selected Relationship property. If a property of the referenced Entity Type is also a Relationship property, a sub-menu will display the properties of that related Entity Type as well. You can further define the list of filtered values based on the workflow state (status) of the Entity Type defined in the Relationship Property.

The system provides a locking mechanism once the property is referenced in the workflow of a different sample to prevent the Property Type from being modified.

The following figure shows the Activity Configuration Panel for a Relationship property.



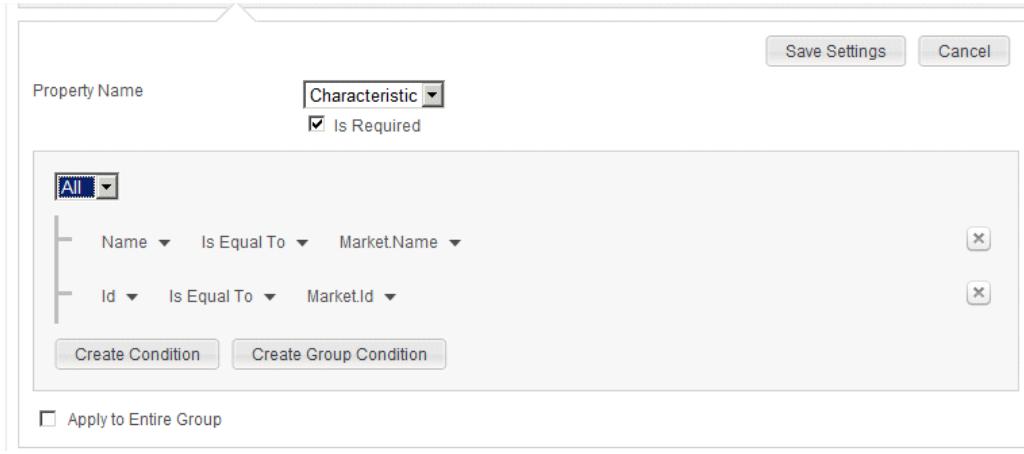
To set one or more conditions:

- 1 Configure the activity as previously described on page 5-47.
- 2 Click **Create Condition**.
- 3 Build the condition as required:
 - a. On the left side, select a property from the drop-down list on the left. The list is populated with the properties of the related Entity Type as well as its ID and status.
 - b. Select an operator in the middle list. The operators are based on the property you previously selected in Step 3a.
 - c. Select the appropriate property or literal value in the right selection list. The list only contains properties that can be compared to the selected property on the left. If not in the Zero State, the list also displays the properties of a parent Entity Type. A "Parent" option is a link to the entity that is setting the relationship.
 - d. To delete a condition, click to the right of that condition.
 - e. To add a sub-condition, click the **Create Group Condition**.

5 Configuring Workflows for Sample Types

4 In the condition selection box above the conditions:

- If any of the configured conditions must be true for the property, select **Any**.
- If all of the configured conditions must be true for the property, select **All**.



Configuring a Condition

Set Sample ID activity

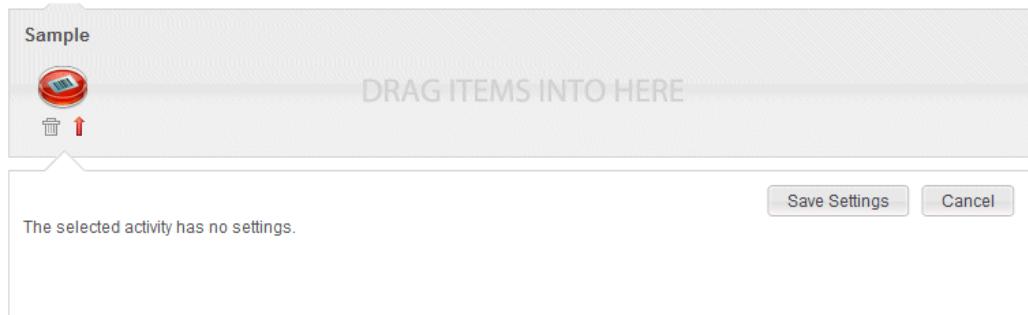


The **Set Sample ID** activity is used to manually enter the Sample ID of one sample or scan it from a barcode during workflow execution. You can only add one Set Sample ID activity per action. It is not compatible with E-Signature activities of Approve/Review/Attest.

When performing group workflow actions, the Set Sample ID activity applies to each individual sample in the group. Refer to *About group workflow activities* on page 5-26.

The Set Sample ID does not have any further configuration parameters.

Note: A Set Sample ID activity cannot be added to an action that contains another Set Sample ID, E-Signature (Approve/Attest/Review), Time Trigger, or Scan ID activity.



"Set Sample ID" Activity

Set State activity



The **Set State** activity is used to specify the target state in which the sample will enter upon completion of its current state. You can either set an implicit target state or a "conditional" state based on a variety of conditional comparisons. For example, if the number of CFUs is greater than the Action Limit, then set the state to "Requires Identification."

During workflow execution, the state will automatically change when the action occurs. The action can be user-initiated or based on a system event (for example, waiting for a completed Accelrys LES Procedure activity in an Accelrys LES Session Complete action).

When performing group workflow actions, the Set State activity applies to each individual sample in the group. Refer to *About group workflow activities* on page 5-26.

Note the following:

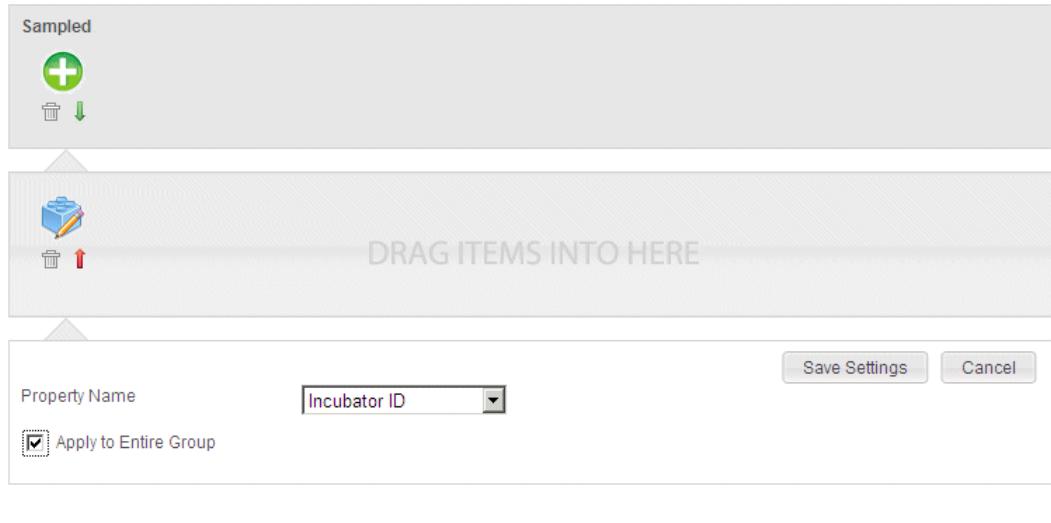
- You can add a Set State activity to an action that contains any other activities.
- If multiple Set State Activities are assigned to a single workflow action, the order of the Set States determines the order in which the conditions are evaluated.

Configuring an Implicit Set State Activity:

To configure an implicit Set State activity:

- 1 Select a target state from the list of states in your workflow.
- 2 Click **Save Settings** to save the configured activity.
- 3 Click **Save Settings** to save the configured action.
- 4 Click **Save Workflow** above the Workflow Editor to commit the changes to the workflow.

5 Configuring Workflows for Sample Types



Implicit “Set State” Activity

Configuring a Conditional Set State Activity:

You can configure a conditional Set State activity to:

- Compare a property to an associated entity, such as Location property
- Compare one property to a second property
- Compare a property to a fixed or literal value
- Compare numeric values and dates supporting <, <=, >, >=, =, <>
- Compare boolean values supporting True/False
- Compare string values supporting Equal to, Not Equal to, Contains
- Compare multiple conditions based on whether *any* or *all* of the conditions are true.

You can add more than one conditional Set State activity to a workflow action. For example, you can configure one Set State activity for a “Below Alert” condition, a second for an “Above Alert” condition, and a third for an “Above Action” condition. This is essentially an “If Then” evaluation.

The position of the conditional Set State activities within the action determines the sequence in which they are executed—the activities are executed from left to right. This allows you to evaluate an “Above Action” first, an “Above Alert” second, and a “Below Alert” third. This prevents the below/above alert conditions to be executed for a result of “Above Action.”

The system uses cGMP Rounding Rules to ensure that the comparison evaluation is performed on numeric values with the same precision.

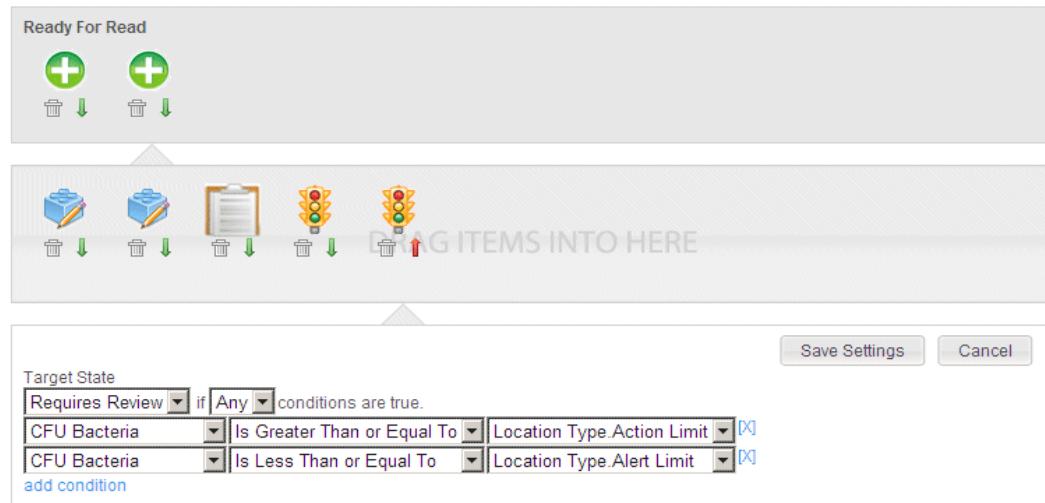
USP 7.20. Rounding Rules excerpt:

When rounding is required, consider only one digit in the decimal place to the right of the last place in the limit expression. If this digit is smaller than 5, it is eliminated and the preceding digit is unchanged. If the digit is greater than 5, it is eliminated and the preceding digit is increased by 1.

To configure a conditional Set State activity:

- 1 Select a target state from the list of states in your workflow.
- 2 Click the **add condition** link.
- 3 Select the property you want to compare in the first selection list.
- 4 Select a comparison expression in the second selection list.
- 5 Select the entity to which you want to compare the property in the third selection list.
- 6 To add multiple conditions:
 - a. Click the **add condition** link and configure additional comparisons as necessary.
 - b. In the first row, select **Any** or **All** to specify how to compare the conditions below.
- 7 When you are done, click **Save Settings**.
- 8 Click **Save Workflow** above the Workflow Editor to commit the changes to the workflow.

5 Configuring Workflows for Sample Types



Conditional "Set State" Activity

Time Trigger activity



The **Time Trigger** activity is used to automatically trigger another type of activity when a certain point in time has been reached. For example, when the incubation target date is reached, the Time Trigger activity sets the workflow state to "Waiting to Read."

The other activities in the same action will be triggered when the current time meets or exceeds the value of the Trigger Property *and* the sample is in the workflow state containing the trigger.

If a workflow action contains both a Set State and Set Property, the Set Property must be configured to trigger before the Set State property. This can be accomplished by using two Time Trigger properties, the earlier trigger for the Set Property property and the later trigger for the Set State property.

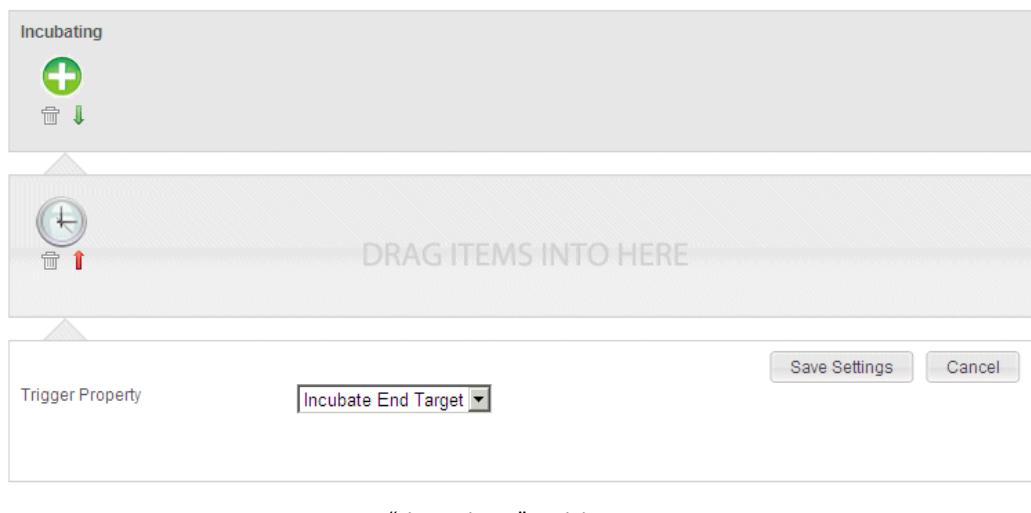
Note the following:

- A workflow action can have any number of Time Trigger activities or none at all. For an action without a Time Trigger, the command buttons are displayed normally for the action in the given state during workflow execution. For an action with one or more triggers, the command buttons are omitted as that action will be triggered by any of the triggers contained in the action.
- A Time Trigger activity cannot be added to an action that contains an activity that requires user input (for example, a Print Label, Accelrys LES Procedure, E-Signature, or Set Instruction Text activity).

- When a time trigger is executed, the recorded date and time displays the time zone of the client that collected the property value which triggers the time trigger, *not* the time zone of the client that processed the action.
- When the trigger is executed on a large number of records, a delay may occur since a periodic review of each record is required. Most workflows using a Time Trigger do not require precision greater than a few minutes.

To configure a Time Trigger activity:

- 1 In the Trigger Property field, select a property from the list. The list displays all of the sample's properties based on the following types:
 - Date
 - Date and Time
 - Date Interval
 - Calculate Point in Time
- 2 Click **Save Settings** to save the configured activity.
- 3 Click **Save Settings** to save the configured action.
- 4 Click **Save Workflow** above the Workflow Editor to commit the changes to the workflow.



Adding an activity to a workflow action

To add an activity to a workflow action:

- 1 Drag an action from the Action toolbar into the workflow state.
- 2 Click the action's green down arrow  icon to display the activities panel below.
- 3 Drag an activity from the Activities toolbar into the activity panel.

If the activity can only be added once and the target panel already contains one, the Workflow Editor snaps it back to the toolbar and displays an error message.

- 4 If the activity has additional parameters, the configuration panel opens. Configure the settings and click **Save Settings**. The activities are described in the section *About group workflow activities* on page 5-26.
- 5 Click the red up arrow  to close the configuration panel.
- 6 Click **Save Settings** to close the activity panel.
- 7 Click the **Save Workflow** button to commit the changes.

Reordering the activities within a workflow action

You can reorder the activities within a workflow action by simply dragging them to a new location. Note the following:

- You must save the settings in order for the new order to take affect.
- Reordering the activities affects the order in which they are displayed in the action dialog presented to the user during group workflow actions.
- If the status of the Sample Type is "Active, the reordering requires an audit trail.
- Reordering activities does not apply to existing samples.
- Reordering activities controls the order in which the conditional "Set State" expressions are evaluated.

Deleting a workflow activity

To delete an activity from an action, click **Delete**  under the activity's icon. You will be prompted to confirm the deletion. Click **OK** to delete the workflow action.

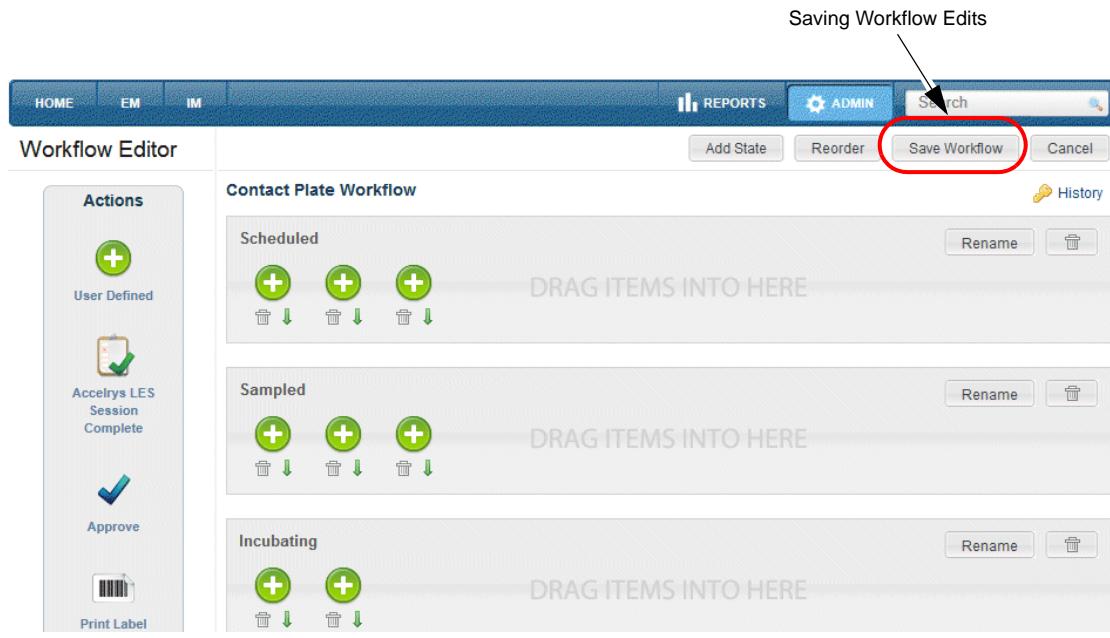
Editing a Configured Workflow

To edit a configured workflow:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sample Types**.
- 3 In the *Sample Types* home page, click the name of the Sample Type whose workflow you want to edit.
- 4 Edit the workflow as explained in the previous sections of this chapter.
- 5 When you are done, do one of the following:
 - To cancel all of the edits, click **Cancel**.
 - To save the workflow, click **Save Workflow** in the Workflow Editor.

IMPORTANT! If you make edits to any part of a workflow and then immediately close your browser, you will lose all of your changes. You must click **Save Workflow** in the upper right corner of the page after each edit to commit your changes.

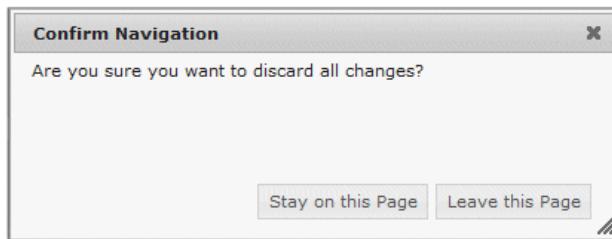
- 6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Sample Types whose status is "Draft."



Saving Workflow Edits

To cancel the edits you have made to the workflow:

- 1 Click **Cancel** above the Workflow Editor.
- 2 In the *Confirm Navigation* dialog:
 - Click **Stay on this Page** to cancel the edits and stay on the current page.
 - Click **Leave this Page** to cancel the changes and return to the Sample Type's *View* page.



"Confirm Navigation" Dialog

Deleting a Workflow

Every Sample Type requires a workflow. For that reason, workflows cannot be deleted.

Exporting Configured Workflows to Other Systems

Since the workflow is inherently tied to its Sample Type, the configured workflows will be included when you export the Sample Type. Refer to the *BIOVIA LIMS System Administration Guide*.

Viewing Audit Trails for Workflows

Every change made to a Sample Type's workflow is recorded in its audit trail. Open the Workflow Editor and click the **History** link to expand the table of revisions. Refer to the *BIOVIA LIMS System Administration Guide* for details on the History table.

What's Next?

Chapter 6 explains how to create and manage Sampling Plans.



6

Managing Sampling Plans

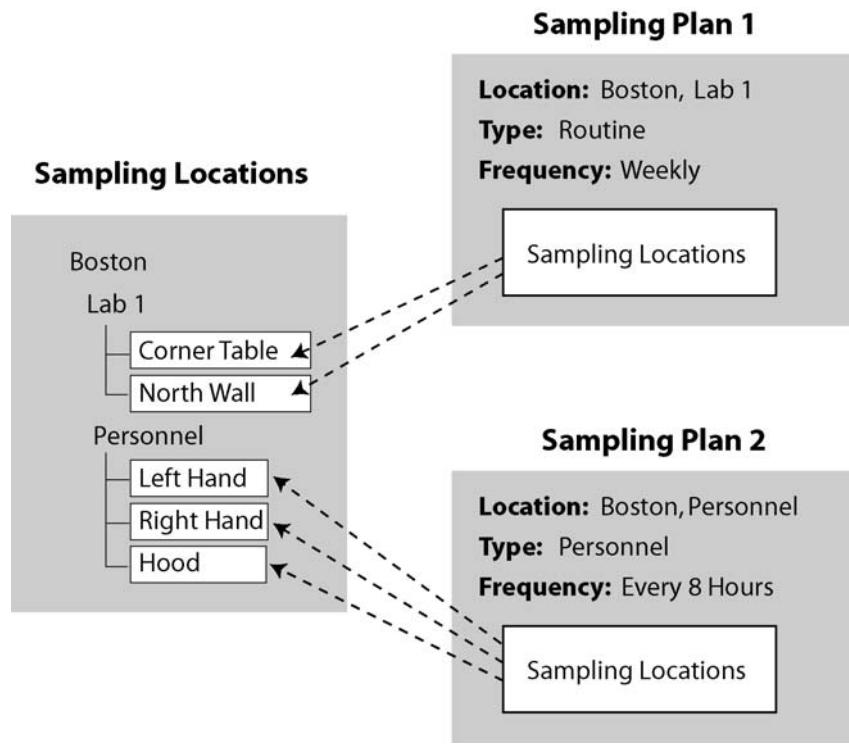
What is a Sampling Plan?

A *Sampling Plan* allows you to define how frequently environmental testing should be performed on selected sampling locations in your environment.

Sampling locations typically define physical locations within a room or lab, but you can also create “Personnel” Sampling Plans to test specific locations on a person (for example, the right hand, left hand, or hood).

The following figure shows the relationship between sampling locations and Sampling Plans. Each sampling location is based on a Location Type whose purpose was defined as a “sampling location” when it was created. Each sampling location is associated with a specific Sample Type to indicate what type of sampling should be performed at that location. Each sampling location is then assigned to one or more Sampling Plans which define the frequency for testing that location.

Once you associate your sampling locations with a Sampling Plan, the schedule master can begin to schedule the actual dates for testing the group of samples specified in the plan. Refer to the *BIOVIA Environmental Monitoring User Guide* for more information on scheduling Sample Groups.



Relationship between Sampling Locations and Sampling Plans

About Sampling Frequency

When you create a new Sampling Plan, you will specify how frequently the associated sampling location should be tested. The *frequency* defined in a Sampling Plan determines if the sampling is to be performed on a routine or random basis.

Routine testing

Routine testing pertains to sampling that is done on a regularly scheduled basis. The frequency options include:

- **By Day**

Routine testing will be performed on one or more specified days, recurring every number of weeks or months.

Format: [day(s) of week] every N [week or month]

Example: “Monday every 4 weeks”

Schedules routine testing to be done on a Monday once a month.

- **By Hour**

Routine sampling will be performed every specified number of hours. This is typically used for the production of a filling batch which requires testing during each shift.

Format: every N hours

Example: “every 8 hours”

Schedules routine testing to be done every 8 hours.

Random testing

Random testing pertains to testing done at random or irregular intervals. This option allows you to assign random testing on any day(s) on a weekly or monthly basis, recurring on any day of the week or on one or more specified days.

Format: every N days of every N [week or month] on either [day(s) of week]

Example 1: “Any 2 days of every 1 week on either Monday - Wednesday - Friday”

Random testing will be performed on any two days each week on either Mondays, Wednesdays, or Fridays.

Example 2: “Any 2 days of every 1 week on either [unspecified days]

Random testing will be performed on any two days per week on any day.

Required Eligibility for Managing Sample Types

In order to create and manage Sampling Plans, users must belong to a User Role that has the following eligibilities:

- **Can View Sampling Plans**—Allows users to view Sampling Plans and their audit trails.
- **Can Administer Sampling Plans**—Allows users to create and edit Sampling Plans.

Status Codes for Sampling Plans

Status codes represent the current state of a Sampling Plan in the system. A Sampling Plan can reside in one of four states:

- **Draft**—The Sampling Plan is being developed by the system administrator and is not yet available for use in the system. A new Sampling Plan is automatically set to “Draft” status when you create it and cannot be added to the calendar until you set its status to “Active.”
- **Active**—The Sampling Plan is available for use in the system. It can be used by its other dependencies in the system, such as samples.

6 Managing Sampling Plans

- **Upgrading**—The “Upgrading” status for Sampling Plans allows you to be able to group or filter the grid in the *Sampling Plans* home page based on this status. The “Upgrading” status has no effect on adding Sampling Plans to the calendar.
- **Inactive**—The Sampling Plan is indefinitely unavailable for use in the system. Its dependencies cannot use any version of this Sampling Plan.

The following table summarizes the actions that are allowed at each state.

Table 6-1 Allowed Actions for the States of a Sampling Plan

Action	Status			
	“Draft”	“Active”	“Upgrading”	“Inactive”
Can view Sampling Plans in system	Administrator only ²	All users ¹	Administrator only ²	Administrator only ²
Can add Sampling Plans to the calendar	No	Yes ²	Yes ²	No
Available to dependencies (for example, Locations, properties, workflow activities)	No	Yes	No	No
Can clone Sampling Plans	Yes ²	Yes ²	Yes ²	Yes ²
Can edit definition of Sampling Plans	Yes ²	Yes ²	Yes ²	Yes ²
Can delete Sampling Plans	Yes ²	No	No	No
Can change status to:	Active	Upgrading Inactive	Active	Active
Versioning enforced for changes	Yes	Yes	Yes	Yes
Reason Code applied to changes	By system	By user	By user	By user
Can export Sampling Plans to other systems	No	Yes ³	No	No

¹ Requires “Can View” eligibility.

² Requires “Can View” and “Can Administer” eligibility.

³ Requires “Can Export” eligibility.

Viewing Configured Sampling Plans

To view the configured Sampling Plans in the system, click the **Sampling Plans** link in the left menu panel of the **ADMIN** tab. The *Sampling Plans* home page is displayed.

The grid lists all of the Sampling Plans that are registered in the system. Each Sampling Plan is identified by its name, description, frequency of execution, and current status.

The icons in the first column represent actions that you can perform on the Sampling Plan. These are determined by your user eligibilities as well as the current status of the Sampling Plan.



Edit—Allows eligible users to edit the corresponding Sampling Plan.



Delete—Allows eligible users to delete the Sample Type. This is only available for Sampling Plans whose status is “Draft.”

You can filter the view of the grid as necessary. Refer to *How the Grid Control Works* in the *BIOVIA LIMS System Administration Guide*.

The screenshot shows the BIOVIA LIMS System Administration interface. At the top, there is a navigation bar with links for HOME, EM, IM, REPORTS, ADMIN, and a search bar. The ADMIN tab is selected. On the left, a sidebar titled "Administration" contains links for System, IM, EM, and Sampling Plans, with "Sampling Plans" highlighted and circled in red. The main area displays a grid of sampling plans with columns for Name, Description, Frequency, and Status. The grid includes 10 entries:

	Name	Description	Frequency	Status
	Controlled Area		ByDay	Active
	FingerDab		ByDay	Active
	Main Lab		ByDay	Active
	QA50		ByDay	Active
	SP Test		ByDay	Active
	Test CP		ByDay	Active
	Test CP monthly		ByDay	Active
	Clean Area		ByDay	Active
	ZP FingerDab		ByDay	Active

At the bottom of the grid, there are navigation buttons for page selection and a message indicating "View 1 - 9 of 9".

Sampling Plans Home Page

To view the details of an individual Sampling Plan, click the name of the Sampling Plan you want to view. Its *View* page is displayed.

The details of the Sampling Plan are displayed in the upper left portion of the page. The sampling locations the Location Type on which each is based are listed below the Information area.

6 Managing Sampling Plans

- Click **Edit Sampling Plan** above the History link to edit the definition of the Sampling Plan. Refer to *Editing a Sampling Plan* on page 6-9.
- Click the **History** link to view the audit trail and revisions made to the Sampling Plan. For more information on audit trails, refer to the *BIOVIA LIMS System Administration Guide*.
- Click **Print Barcode Labels** to print barcode labels for a Sample Group. Refer to *Printing Barcode Labels for Sampling Plates* on page 7-8.

The screenshot shows the 'Sampling Plans' page within the BIOVIA LIMS System Administration. The top navigation bar includes links for HOME, EM, IM, REPORTS, ADMIN, and Search. A 'Controlled Area' section displays status (Active), frequency (ByDay), and plan type (Routine). Below this is a grid titled 'Locations' with columns for Name and Type. The grid lists four sampling points under a 'Controlled Area' location:

Name	Type
Controlled Area » 235 ISO B » Routine » Centre of room	Sampling Point
Controlled Area » 235 ISO B » Routine » CP23 Shelves	Sampling Point
Controlled Area » 235 ISO B » Routine » CP28 Floor by door	Sampling Point
Controlled Area » 235 ISO B » Routine » CP28 Floor middle of room	Sampling Point

Arrows point from the text labels 'Details of Sampling Plan', 'Associated Sampling Locations', and 'Associated Location Types' to their respective sections in the screenshot.

Sampling Plan's "View" Page

Creating a New Sampling Plan

To create a new Sampling Plan:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sampling Plans**.
- 3 In the *Sampling Plans* home page, click **Create Sampling Plan** above the grid.
- 4 In the *Create Sampling Plan* page, enter a name for the Sampling Plan. The name must be unique and cannot exceed 100 characters. Blank spaces at the beginning or end of the name are not allowed.
- 5 Enter a description (optional). The description cannot exceed 1000 characters.

- 6 For the Plan Type, select **Routine**, **Personnel**, or **Batch**. When adding this Sampling Plan to the calendar, the list of available plans will be filtered based on this selection.
- 7 Select the frequency of the sampling, as described in the section *About Sampling Frequency* on page 6-2:
 - By Day
 - By Hour
 - Random

Create Sampling Plan

What is a Sampling Plan?
A Sampling Plan is an association between locations and samples.

Name _____

Description _____

Plan Type
 Routine

Frequency
 By Day By Hour Random
 Mon Tues Wed Thu Fri Sat Sun
every _____ week

Locations
Macclesfield, UK

Status
Draft

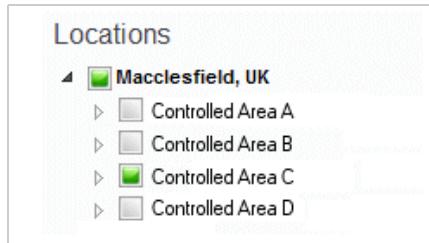
Can View
ANY Permission Group
Add User Groups Create Permission Group

Can Process
ANY Permission Group
Add User Groups Create Permission Group

Creating a New Sampling Plan

- 8 Under Locations, expand each root location and select the sampling locations to which this Sampling Plan will apply. The list displays only those sampling locations whose status is “Active.”

6 Managing Sampling Plans



- 9 To restrict who can view and process this Sampling Plan, configure one or more *access expressions* in the “Can View” and “Can Process” sections. Each expression, identified by a gray panel, controls which User Groups have permission to the corresponding functionality.

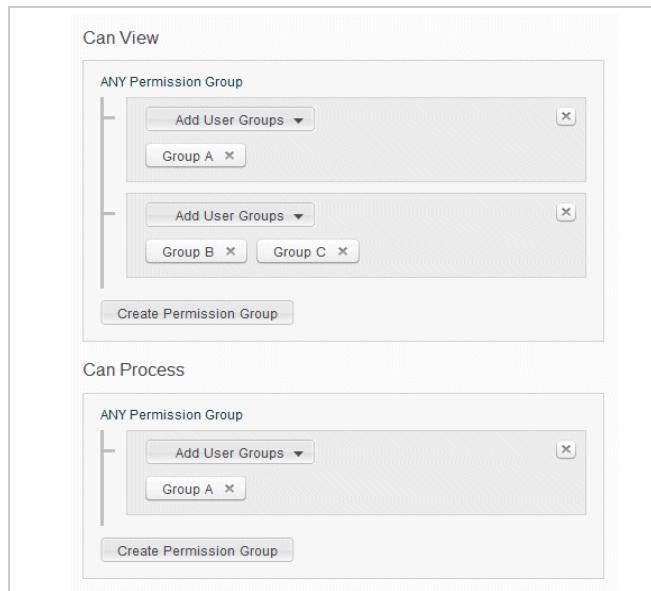
If you do not specify any permission groups, anyone with the global eligibility can view and process this Sampling Plan, as well as the Sample Groups created from the plan and the samples included in those Sample Groups.

Note the following:

- The **Can View** area allows users to view the Sampling Plan but cannot process it.
- The **Can Process** area allows users to view and process this Sampling Plan (and associated Sample Groups and samples) assuming no other restrictions are enforced through a “Restrict Group Access” activity in the workflow.
- You must have at least one active User Group in the system in order to create an access expression.
- Each access expression must contain at least one User Group and can contain multiple groups.
- Users must belong to all of the User Groups in any one expression in order to view or process Entity Instances, thus the selected User Groups act as a logical “AND” function.
- Each expression is evaluated independently, thus the expression acts as a logical “OR” function.
- If any of the selected User Groups become inactive, the expression evaluates the remaining User Groups. If there are no other groups in the expression, this action becomes available for anyone to execute.
- Within an expression, if one group is inactive but other groups are active, then the expression does not allow access to the other active groups. For example, if two user groups are added (Boston and Developers) and Boston is inactivated, Developers are not granted access.

To configure an access expression:

- a. Click **Create Permission Group** in the “Can View” or “Can Process” area.
- b. Click **Add User Groups** and select one or more groups. Only the active User Groups in your system are displayed.
- c. To create another expression, click **Create Permission Group** and repeat Step 8b.



Creating Permission Groups for Accessing Sampling Plans

- 10 When you are done, click **Create**. The *View* page for the new Sampling indicates its status is “Draft.”
- 11 To make this Sampling Plan available for use, set its status to “Active.”

Editing a Sampling Plan

To modify an existing Sampling Plan, set its status to “Inactive,” make your edits, then set its status back to “Active” to make it available for use in the system. An alternate approach is to make the changes to the Sampling Plan in the Development site, then move it to Production via the export/import function.

A Sample Group is added to the calendar based on the definition of the Sampling Plan when it was added.

6 Managing Sampling Plans

- Sample Groups added to the calendar after the change will reflect the updated Sampling Plan.
- For Sample Groups already in the calendar before the plan was modified, the samples will be created based on the old Sampling Plan, but each location will use the latest Location\Sample Type information when created.

For example, the following scenario:

Sampling Plan v1:

Location A->Sample Type A
Location B->Sample Type B
Location C->Sample Type C

1. Add to the calendar in some future date:

Sample Group A

[Location A Placeholder]
[Location B Placeholder]
[Location C Placeholder]

2. Now add a new location to the plan...

Sampling Plan v2:

Location A->Sample Type A
Location B->Sample Type B
Location C->Sample Type C
Location D->Sample Type D

3. ... then deactivate Location C. When the day arrives to create the samples:

Sample Group A

Sample A is created based on latest Location A and latest Sample Type A.
Sample B is created based on latest Location B and latest Sample Type B.
Sample C is not created as Location C is inactive.
Sample D is NOT created as it was not in the original plan.

To edit a Sampling Plan:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sampling Plans**.click **Sampling Plans**.

- 3 In the *Sampling Plans* home page, do one of the following:
 - Click **Edit**  preceding the name of the Sampling Plan.
 - Click the name of the Sampling Plan to open its *View* page, then click **Edit**.
- 4 In the *Edit Sampling Plan* page, change any of the configured fields as necessary.

Edit Controlled Area

What is a Sampling Plan?
A Sampling Plan is an association between locations and samples.

Name

Description

Plan Type

Frequency
 By Day By Hour Random
 Mon Tues Wed Thur Fri Sat Sun
every week

Locations
[Show 66 locations.](#)

Status

Can View
ANY Permission Group

Can Process
ANY Permission Group

Editing a Sampling Plan

- 5 Click **Update**.

- 6 In the *Reason Code Entry* dialog box, specify a Reason Code and enter your password. This dialog box is not displayed for Sampling Plans whose status is "Draft."

Upgrading a Sampling Plan

You can set the status of a Sampling Plan to "Upgrading" in order to be able to group or filter the grid in the *Sampling Plans* home page based on this status. Note that the "Upgrading" status has no effect on adding the Sampling Plan to the calendar. To change the status, refer to *Editing a Sampling Plan* on page 6-9.

Inactivating a Sampling Plan

To make an active Sampling Plan unavailable for use in the system, set its status to "Inactive." While the Sampling Plan is inactive, the system will not allow the Sampling Plan to be added to the calendar. To change the status, refer to *Editing a Sampling Plan* on page 6-9.

Deleting a Sampling Plan

You can only delete a Sampling Plan whose status is "Draft."

To delete a Sampling Plan from the system:

To create a new Sampling Plan:

- 1 Click the **ADMIN** tab in the main menu bar.
- 2 Under the EM section heading in the left navigation panel, click **Sampling Plans**.
- 3 In the *Sampling Plans* home page, do one of the following:
 - Click the **Delete**  that precedes the Sampling Plan name.
 - Click the name of the Sampling Plan to open its *View* page, then click **Delete**.
- 4 In the *Confirmation* dialog, click **OK** to delete the Sampling Plan.

Exporting Sampling Plans to Other Systems

Once you have finished configuring your Sampling Plans, you can export them to a file so you can import and deploy them on other systems. Refer to the *BIOVIA LIMS System Administration Guide* for more information.

What's Next?

Chapter 7 explains how to print barcode labels for sampling plates.



7

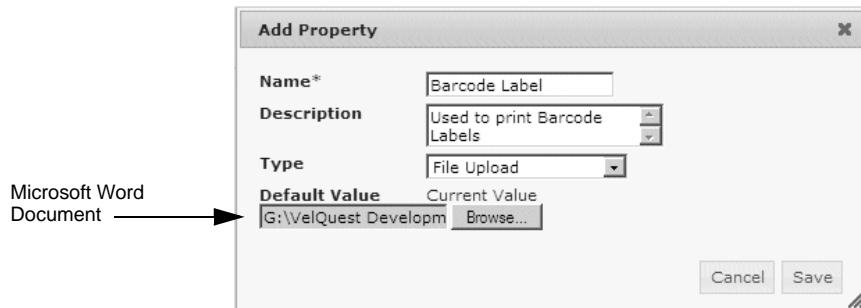
Creating Barcode Labels for Sampling Plates

Prerequisites

BIOVIA Environmental Monitoring allows the user to scan a unique ID from each sampling plate and associate it with a specific sample in a Sample Group. In some cases, these unique numbers are provided by the vendor on the plate. If the plates do not contain a unique barcode ID, you can use the Microsoft Word Mail Merge utility to configure barcodes labels containing the unique identifier. You can also include additional information on the label, such as the Location Name, Sampling Plan, or Date.

Before you begin, you need the following entities configured in your system:

- 1 Adobe Reader v9.4
- 2 Code 39 font (in order for barcodes to print correctly)
- 3 **Blank Microsoft Word file:**
Open and save a blank Microsoft Word file. This will be the file that you configure for the label explained in *Configuring the Label Document* on page 7-2. Saving the file now will enable you to associate it with the Location Type in Step 4 below.
- 4 **Location Type:**
You must have an “Active” Location Type with a purpose of “Sampling Location.” It must contain a **File Upload** property whose name must be “Barcode Label.” There can only be one property with this name associated with the Location Type. In the Default Value field, you will browse to the Microsoft Word document that you created in Step 3 above.



Location Type with File Upload Property

In addition, you can create labels on a sheet or multiple labels on a page. To create a sheet of labels, create a File Upload property called “Barcode Group.” There can only be one property with this name associated with the Location Type. In the Default Value field, you will browse to the Microsoft Word document that you created in Step 3.

5 Sample Type

You must have an “Active” Sample Type that is associated with the Location Type you configured in Step 4.

6 Sampling Locations

Create your sampling locations based on the Location Type in Step 4 and set their status to “Active.” On the *Add Location* window, select the Sample Type you configured in Step 5.

The next section explains how to configure the label document you created in Step 3.

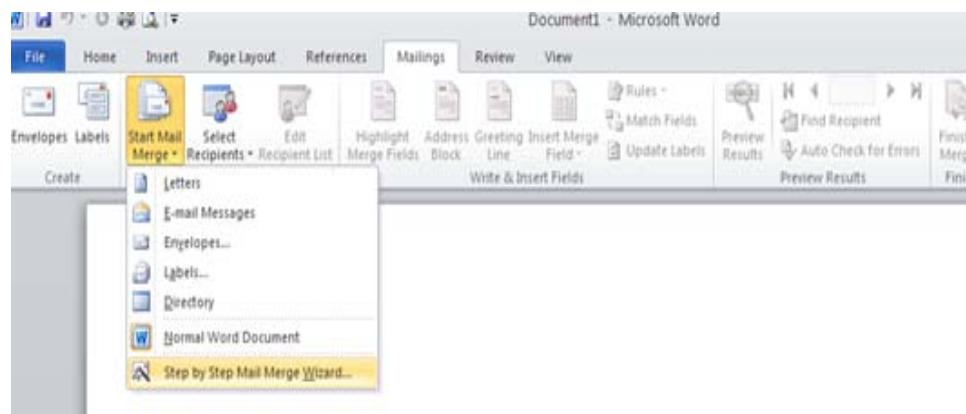
Configuring the Label Document

Since various versions of Microsoft Word display the Mail Merge utility differently, these instructions provide the basic concept of configuring a barcode label document. For more information on your version of Mail Merge, refer to the online help supplied by Microsoft Corporation.

IMPORTANT! If you do not have access to the database and are manually creating the label document, enter the property names in uppercase characters and use underscores for blank spaces (for example, “Sample ID” should be entered as SAMPLE_ID).

To configure the label document (using Microsoft Word 2010 as an example), follow these steps:

- 1 Open the blank Microsoft Word document that you created in the previous section and click **Mailings** in the toolbar ribbon.
- 2 Click **Start Mail Merge** and select **Step by Step Mail Merge Wizard**.



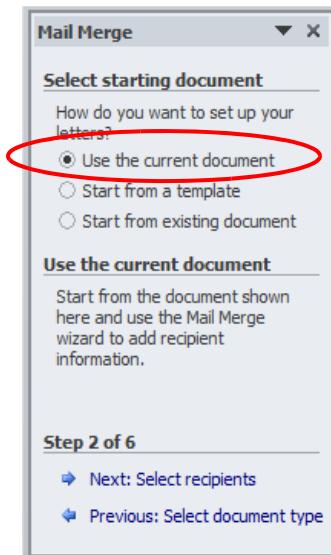
Starting Mail Merge

- 3 In Step 1 of the wizard, select **Letters**. Click Next.



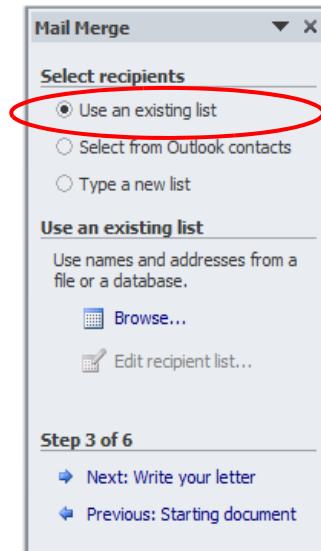
Step 1 of Mail Merge Wizard

- 4 In Step 2 of the wizard, select **Use the current document** and click Next.



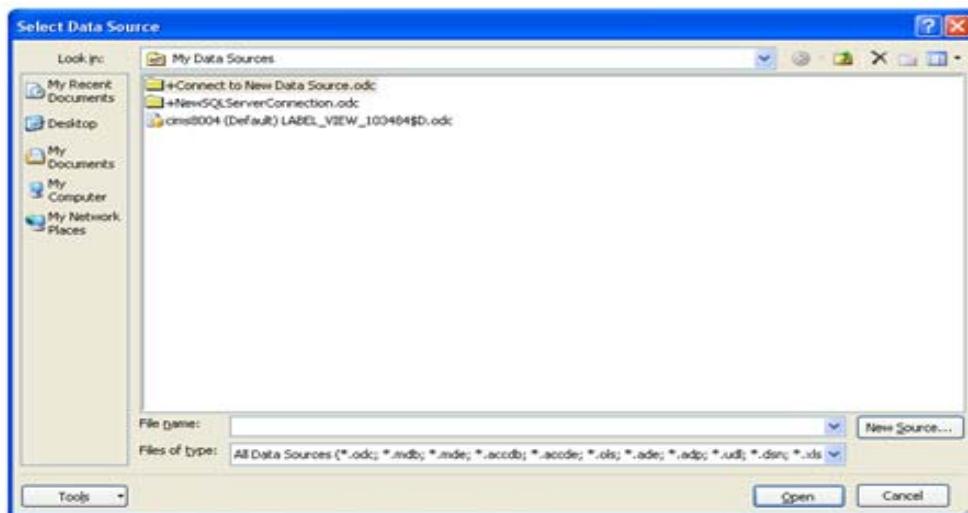
Step 2 of Mail Merge Wizard

- 5 In Step 3 of the wizard, select **Use an existing list** and click Next.



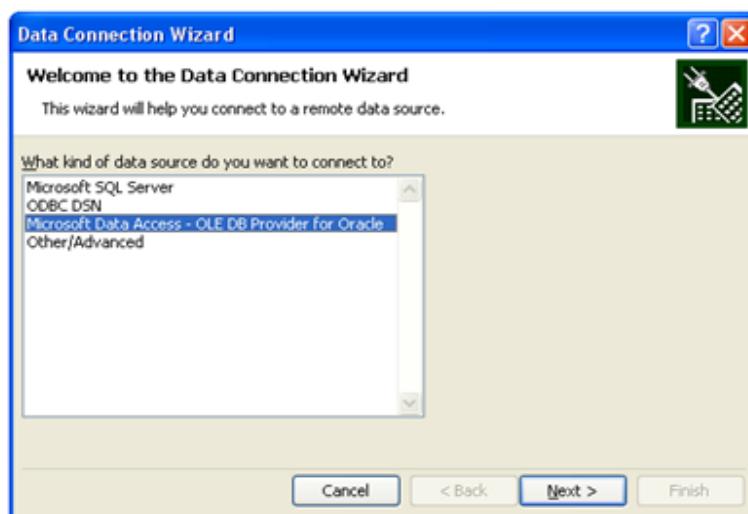
Step 3 of Mail Merge Wizard

- 6 In the *Select Data Source* screen, click **+Connect to New Data Source.odc** and click **Open**.



"Select Data Source" Screen

- 7 In the *Data Connection Wizard Welcome* screen, select **Microsoft Data Access - OLE DB Provider for Oracle** and click Next.



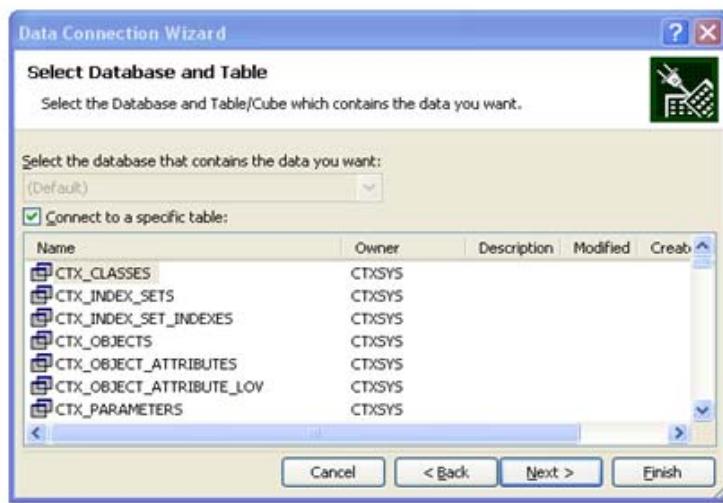
Data Connection Wizard - "Welcome" Screen

- 8 In the *Connect to Database Server* screen, enter your Database Server name and your logon credentials. Click Next.



"Connect to Database Server" Screen

- 9 In the *Select Database and Table* screen, select the appropriate database table and click Next.



"Select Database and Table" Screen

- 10 When prompted, enter your password.
- 11 On the Mail Merge toolbar, click the **Insert Merge Fields** icon.
- 12 In the *Insert Merge Field* window, select the fields you want in your label and click **Insert** after each selection.
- 13 To format a field, highlight the field name, click between the angel brackets (>><<), and press **Enter**.

Note: You must have Code 39 installed to print barcodes correctly.

In order to change the format of a date, press **ALT+F9** to switch to Field View. After your merged field, add the required formatting by using \@ “format” syntax.

For example:

Exp Date: {MERGEFIELD “SOONEST_EXPIRATION” \@ “dd-MMM-yyyy”}

Press **ALT+F9** to review to normal view. For more information refer to:

<http://support.microsoft.com/kb/304387/en-us>

Note: You can also manually add the following custom fields to the label:

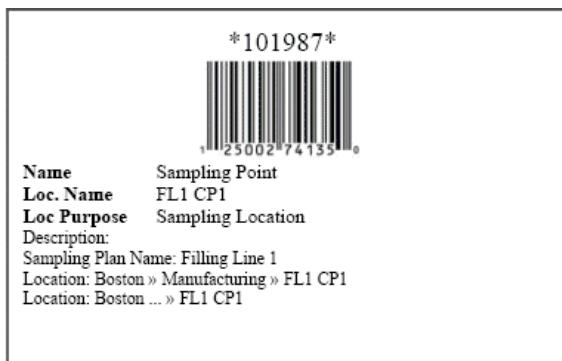
- **SEQ_BARCODE**
Adds an auto-generated value that uniquely identifies the barcode label.
- **PRINT_DATE**
Prints the date and time that the barcode was generated.
- **LOCATION_PARENTS_FULL**
Displays the full lineage for a location value.
- **LOCATION_PARENTS_TRUNC**
Displays the first seven characters of the full location name plus three periods, followed by the last 10 characters of the full location name. For example:

US >>Massachusetts >>Boston

is displayed as:

US >>Mass...s >> Boston

An example of the printed label is shown below:



Example of Printed Label

Printing Barcode Labels for Sampling Plates

Once you have used the Microsoft Word Mail Merge utility to configure the required barcode labels, you can print one or more sets of labels for all of the samples in the Sample Group.

To print barcode labels for a group of samples:

To create a new Sampling Plan:

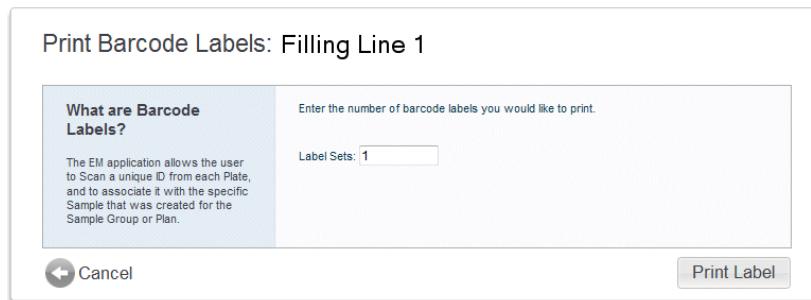
- 1 Click the **ADMIN** tab in the main menu bar.
- 1 Under the EM section heading in the left navigation panel, click **Sampling Plans**.
- 2 In the *Sampling Plans* home page, click the name of the Sampling Plan that contains the sampling locations that need the barcode labels.
- 3 In the Sampling Plan's *View* page, click **Print Barcode Labels**.

The screenshot shows the 'Sampling Plans' view in the BIOVIA system. The top navigation bar includes 'HOME', 'EM', 'IM', 'REPORTS', 'ADMIN', and a 'Search' field. The left sidebar has links for 'System', 'IM', 'EM', 'Sampling Plans' (which is selected and highlighted in blue), and 'Sample Types'. The main content area has a 'Controlled Area' summary with status 'Active', frequency 'ByDay', and plan type 'Routine'. Below this is a 'Locations' table with four entries, all categorized as 'Sampling Point':

Name	Type
Controlled Area » 235 ISO B » Routine » Centre of room	Sampling Point
Controlled Area » 235 ISO B » Routine » CP23 Shelves	Sampling Point
Controlled Area » 235 ISO B » Routine » CP28 Floor by door	Sampling Point
Controlled Area » 235 ISO B » Routine » CP28 Floor middle of room	Sampling Point

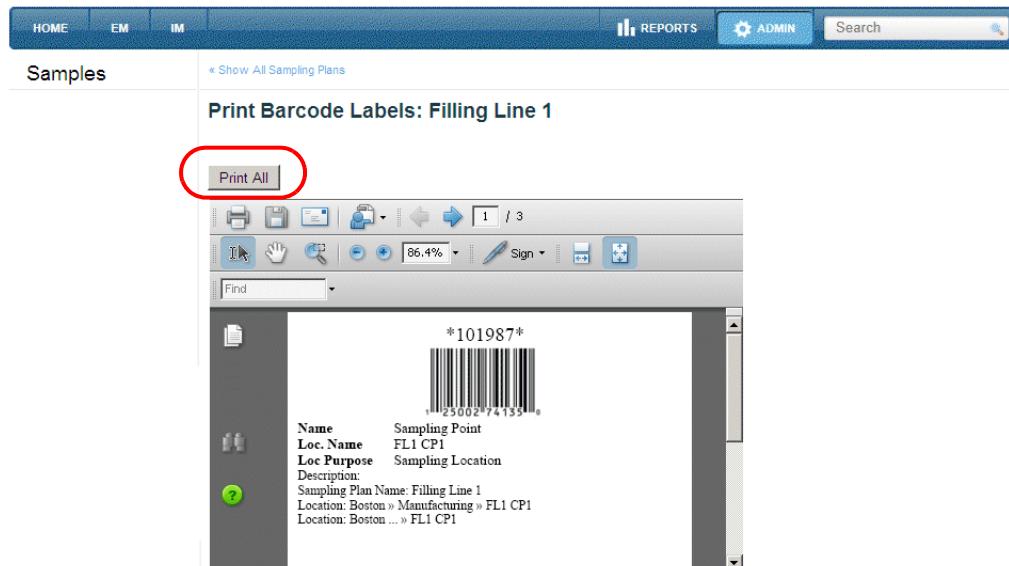
Printing Barcode Labels

- 4 In the *Print Barcode* page, enter the number of sets of labels that you want to print, then click **Print Label**.



Print Barcode Page

- 5 In the *Print Barcode Labels* page, click **Print All**.



Printing Barcodes

- 6 In the *Print* dialog, enter the number of copies and click OK.

Note: You can also print labels during the execution of the workflow. Refer to the *Environmental Monitoring System User Guide* for more information.

--- Blank Page ---
