



Forest Resources Division – GIS

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FRIA Initial Inventory Public Data Standard Version 1.0

For questions related to this standard, please contact:
Oregon Department of Forestry, Forest Resources Division GIS
Forest.ResourcesGIS@odf.oregon.gov.



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1.0 Introduction

In 2022, the Private Forest Accord Report (PFA) was developed by a coalition of conservation and industry groups. The PFA recommended changes to the existing Forest Practices Act (FPA) rules, including new guidelines for building and maintaining private forest roads in Oregon. Those recommendations were codified into law through a series of Oregon House and Senate bills. Following the passage of these new rules, the Forest Road Inventory and Assessment (FRIA) program was created. The FRIA program consists of several phases and requires large forestland owners in Oregon to identify and submit an inventory of all forest roads and water crossings in their ownership, including yearly updates on work done to bring their forest roads and water crossings into compliance with the FPA.

The second phase of the FRIA program is called the “Initial Inventory,” where large forestland owners will submit a complete inventory of all forest roads and associated water crossings, including the condition of roads and crossings, across their entire ownership. The components of this inventory are grouped into Road Management Blocks (RMBs) by each landowner to organize the data into cohesive reporting units.

For more information about the FRIA program and related rules, and for descriptions of water crossings, forest roads, RMBs, refer to the FRIA Technical Guidance document available on the [Oregon Department of Forestry \(ODF\) website](#). A [template Esri file geodatabase](#) that implements this standard is available alongside the FRIA Technical Guidance document.

1.1 Mission and Goals

The goal of this data standard is to provide a common spatial data framework that all large forestland owners can use to generate standardized FRIA Initial Inventory data submissions. By implementing this standard, landowners and ODF are able to work from a common standard, facilitating data sharing efforts, streamlining communication, and reducing costs associated with data sharing and maintenance. If this standard is used to structure spatial databases for use beyond data sharing efforts, it should be treated as a baseline and expanded as necessary to suit the needs of individual organizations.

1.2 Description of the Standard

This standard includes all essential elements and data structures necessary to describe and exchange spatial FRIA Initial Inventory data. It consists of three parts, collectively representing the data elements required in the inventory, and can be used by large forestland owners to ensure that all spatial data elements are collected and reported completely and accurately to ODF. The standard also serves as a starting point for expansion to support future data transfer and communication between large forestland owners required to complete the FRIA and ODF as the FRIA process continues into its later phases.

The elements in the standard spatially represent all RMBs, water crossings, and forest road segments subject to FRIA reporting on parcels owned by large forestland owners. In this standard, polygon features represent RMBs, line features represent forest roads, and point features represent water crossings. Point and line features are related to polygon features by a common ID field. All features are uniquely identified with a feature identifier. Point, line, and polygon features are composed of minimum required data



elements and optional data elements. Minimum required data elements for all feature types must be populated with a value appropriate for the element. Optional data elements are not required, but provide additional context that may be useful when collecting features in the field and for prioritization of projects in later FRIA phases.

1.3 Relationship to Other Standards

As required by the PFA, the data elements defined in this standard were developed alongside feedback from external stakeholders and the Oregon Department of Fish Wildlife (ODFW). This data standard is designed to include all required FRIA data reporting elements and can be cross-walked to the existing Oregon Fish Passage Barrier Data Standard to facilitate interagency cooperation and data sharing. Data cross-walking to the Oregon Fish Passage Barrier Standard will be coordinated and conducted by ODF.

1.4 Maintenance of the Standard

This standard will be updated if and when it becomes necessary to do so. Any proposed changes will be reviewed and implemented by ODF, and resources for translating or updating data between data standard versions will be published on ODF's website alongside the updated standard.

2.0 Technical and Operational Context

2.1 Data Environment

The data environment for this standard is a vector model comprised of points, lines, and polygons. The preferred exchange format for FRIA Initial Inventory data is the Esri file geodatabase. This format was chosen for interoperability with the enterprise GIS software used by ODF, and is supported by major GIS and CAD software, including open-source software.

2.2 Reference System

Exchange data should utilize a well-known coordinate reference system, either geographic or projected, that is recognized by the European Petroleum Survey Group (EPSG) Registry. The preferred reference system for elements in this standard is Oregon Lambert (EPSG 2992).

2.3 Accuracy

This data standard does not require any specific horizontal accuracy and does not include feature-level attributes to track the horizontal accuracy of features. However, those implementing the standard may wish to expand the standard and track the horizontal accuracy of their collected features for their own use.

2.4 Feature Identifier

This standard includes unique feature identifiers for all features and feature types. These unique feature identifiers can be used to create hierarchical relationships between features by including the related feature identifier for higher-level data elements in the lower-level feature.



2.5 Attributes

The values for many attribute fields in this standard are limited to a list of choices, commonly referred to as a domain. Utilizing domains in this standard increases data integrity by limiting the values that can exist in a given field and provides clarity as to the purpose or intent of some fields. A full description of the domain values for all fields in this standard can be found in Appendix B.

2.6 Metadata

This standard follows the Oregon GIS Metadata Standard for geospatial data. Those implementing this standard are encouraged to apply the more rigorous standards set by the Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata.

3.0 Data Characteristics

In this standard, it is intended that point features represent stream crossings, line features represent forest roads, and polygon features represent Road Management Blocks (RMBs). Not all data elements are required. Refer to Section 3.1 for the minimum required data elements, and Section 3.2 for optional data elements. Refer to Appendices A and B for complete characteristics of all data elements in this standard.

3.1 Minimum Required Data Elements

Required data elements are elements that are required to be submitted to ODF as part of the FRIA Initial Inventory process.

3.1.1 Points

<i>Name</i>	<i>Description</i>
CrossingID	Unique identifier for crossing feature.
RMBID	Unique identifier of the RMB feature the road feature is related to.
RoadID	Unique identifier of the road feature the crossing feature is related to.
CrossingCollectionDate	Crossing feature collection date.
CrossingType	Type of crossing.
InstallDate	Year that the crossing was installed, if known.
WaterCrossingClassification	Water crossing classification as defined by OAR 629-625-0900(6)(a)(D)(vi).
PreExistingCulvert	Water crossing culvert is considered pre-existing.
StreamClassification	Classification of the stream being crossed as defined by OAR 629-625-0900(6)(a)(D)(ii).
Stream303d	Stream is 303(d) listed due to temperature, turbidity, or sedimentation.



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CrossingMaterial	Dominant material type of crossing.
CrossingMaterialAssessment	Condition of the crossing material. Inspect: structural integrity, stability, fill condition. Assess the rate of corrosion, look for damaged joints, cracks, perforations, and other physical changes. Look for sediment deposits, inputs for plugging, and evidence of erosion.
FishPassage	Fish passage assessment determined using methods described in ODF FRIA Technical Guidance.
FishBarrierOutletDrop	Crossing outlet drop creating fish passage barrier.
FishBarrierInletWidth	Crossing inlet width less than active channel width, creating fish passage barrier.
FishBarrierChannelAlignment	Crossing not in alignment with the active channel, creating fish passage barrier.
FishBarrierSubstrate	Crossing substrate not continuous, plentiful, and consistent with streambed material, creating fish passage barrier.

3.1.2 Lines

<i>Name</i>	<i>Description</i>
RoadID	Unique identifier for road feature.
RMBID	Unique identifier of the RMB feature the road feature is related to.
RoadCollectionDate	Road feature collection date.
FPAClassification	Road feature classification as defined in OAR 629-625-0900(6)(b).
RoadType	Type of road as determined by OAR 629-600-0100.
RoadAge	Year or decade that the road was constructed, if known.

3.1.3 Polygons

<i>Name</i>	<i>Description</i>
RMBID	Unique identifier for RMB polygon.



3.2 Optional Data Elements

Optional data elements are elements not required to be submitted to ODF as part of the FRIA Initial Inventory process, however collection of these elements is encouraged. These elements may be relevant for prioritization of work and provide a more comprehensive framework for large forestland owners completing an inventory of their forest roads and water crossings.

3.2.1 Points

<i>Name</i>	<i>Description</i>
CrossingName	Name of crossing, if present.
ActiveChannelWidth	Assessment of active channel width. Assess whether the crossing spans the active channel and inspect for erosion of the fill and any scouring of the channel.
DiversionPotential	Crossing has the potential to divert waters of the state. Assess active stream diversions and/or stream diversion potential. Consider the grades of the road and crossing, the plugging potential of the water crossing culvert, and where the stream would flow if the crossing failed.
HydrologicConnectivity	Crossing is hydrologically connected to waters of the state. Evaluate direct routes of drainage to waters of the state at the crossing location.
SedimentDelivery	Assessment of active or potential sediment delivery at crossing. Consider the condition and volume of fill at the crossing.
PeakFlow	Crossing meets 50-year or 100-year peak flow requirements. If the crossing does not meet 50-year peak flow it is considered imminent risk.
EvidentErosionControl	Erosion control strategies evident at crossing. Inspect erosion control used at and near the crossing, determine if the techniques are adequate in minimizing sediment delivery.

3.2.2 Lines

<i>Name</i>	<i>Description</i>
RoadName	Road name, if present.
RoadPrismAssessment	Assessment of road surface condition. Inspect cutslope and fillslope stability, presence and condition of sidecast material, soil movement, vegetation, evidence of erosion, drainage provided for seeps or springs.



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SurfaceType	Surface material type. Paved roads include bituminous, concrete or other hard surface. Surfaced roads are non-paved roads that are either aggregate base or crushed stone. Unsurfaced roads are soil based roads.
RoadGradeShape	Assessment of road grade/shape. The shape of the road surface and average road grade can be indicators of potential for hydrologic connectivity.
DitchCondition	Assessment of ditch condition along the segment. Inspect ditch stability, evidence of erosion.
DitchOutlet	Assessment of ditchline outlet for erosion, diversion potential, and hydrologic connectivity.
HydrologicConnectivity	Road feature is hydrologically connected to waters of the state. Evaluate direct routes of drainage to waters of the state, and the source of the runoff.
DiversionPotential	Road feature has the potential to divert waters of the state. Assess the diversion potential for ditches and drainage features along road segment.
EvidentErosionControl	Erosion control strategies evident on road feature. Inspect erosion control used along the road prism to determine if the techniques are adequate in minimizing sediment delivery.

3.2.3 Polygons

Name	Description
RMBOwner	RMB ownership.
RMBName	RMB name.

3.2.4 Attachments

While not required, photo attachments for line and point features provide additional context and are potentially beneficial when prioritizing features for corrective action or when discussing features with partners or collaborating state agencies.



Appendix A: Data Dictionary

Points

Point features represent FRIA Initial Inventory water crossings. See Section 3.1.1 and 3.2.1 for minimum required and optional data elements, respectively.

<i>Name</i>	<i>Type</i>	<i>Length</i>	<i>Description</i>	<i>Domain</i>
CrossingID	Text	255	Unique identifier for crossing feature.	
RMBID	Text	255	Unique identifier of the RMB feature the road feature is related to.	
RoadID	Text	255	Unique identifier of the road feature the crossing is related to.	
CrossingName	Text	255	Crossing name, if present.	
CrossingCollectionDate	Date		Crossing feature collection date.	
CrossingType	Short		Type of crossing.	CrossingType
InstallDate	Date		Year that the crossing was installed, if known.	
WaterCrossingClassification	Short		Water crossing classification as defined by OAR 629-625-0900(6)(a)(D)(vi).	WaterCrossingClassification
PreExistingCulvert	Short		Water crossing culvert is considered pre-existing.	PreExistingCulvert
StreamClassification	Short		Classification of the stream being crossed as defined by OAR 629-625-0900(6)(a)(D)(ii).	StreamClassification
Stream303d	Short		Stream is 303(d) listed due to temperature, turbidity, or sedimentation.	YesOrNo
CrossingMaterial	Short		Dominant material type of crossing.	CrossingMaterial
CrossingMaterialAssessment	Short		Condition of the crossing material. Inspect: structural integrity, stability, fill condition. Assess the rate of corrosion, look for damaged joints, cracks, perforations, and other physical changes. Look for sediment deposits, inputs for plugging, and evidence of erosion.	Condition
FishPassage	Short		Fish passage assessment determined using methods described in ODF FRIA Technical Guidance.	FishPassageAssessment



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FishBarrierOutletDrop	Short		Crossing outlet drop creating fish passage barrier.	YesOrNo
FishBarrierInletWidth	Short		Crossing inlet width less than active channel width creating fish passage barrier.	YesOrNo
FishBarrierChannelAlignment	Short		Crossing in alignment with the active channel, not creating fish passage barrier.	YesOrNo
FishBarrierSubstrate	Short		Crossing substrate continuous, plentiful, and consistent with streambed material, not creating fish passage barrier	YesOrNo
ActiveChannelWidth	Text	255	Assessment of active channel width. Assess whether the crossing spans the active channel and inspect for erosion of the fill and any scouring of the channel.	
DiversionPotential	Short		Crossing has the potential to divert waters of the state. Assess active stream diversions and/or stream diversion potential. Consider the grades of the road and crossing, the plugging potential of the water crossing culvert, and where the stream would flow if the crossing failed.	YesOrNo
HydrologicConnectivity	Short		Crossing is hydrologically connected to waters of the state. Evaluate direct routes of drainage to waters of the state at the crossing location.	YesOrNo
SedimentDelivery	Text	255	Assessment of active or potential sediment delivery at crossing. Consider the condition and volume of fill at the crossing.	
PeakFlow	Short		Crossing meets 50-year or 100-year peak flow requirements.	YesOrNo
EvidentErosionControl	Short		Erosion control strategies evident at crossing. Inspect erosion control used at and near the crossing, determine if the techniques are adequate in minimizing sediment delivery.	YesOrNo

Lines

Line features represent FRIA Initial Inventory road centerlines. See Section 3.1.2 and 3.2.2 for minimum required and optional data elements, respectively.



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Name	Type	Length	Description	Domain
RoadID	Text	255	Unique identifier for road feature.	
RMBID	Text	255	Unique identifier of the RMB feature the road feature is related to.	
RoadCollectionDate	Date		Road feature collection date.	
FPAClassification	Short		Road feature classification as defined in OAR 629-625-0900(6)(b).	RoadClassification
RoadType	Short		Type of road as determined by OAR 629-600-0100.	RoadType
RoadAge	Date		Year or decade that the road was constructed, if known.	
RoadName	Text	255	Road name if present.	
RoadPrismAssessment	Text	255	Assessment of road surface condition. Inspect cutslope and fillslope stability, presence and condition of sidecast material, soil movement, vegetation, evidence of erosion, drainage provided for seeps or springs.	
SurfaceType	Short		Surface material type. Paved roads include bituminous, concrete or other hard surface. Surfaced roads are non-paved roads that are either aggregate base or crushed stone. Unsurfaced roads are soil based roads.	SurfaceType
RoadGradeShape	Text	255	Assessment of road grade/shape. The shape of the road surface and average road grade can be indicators of potential for hydrologic connectivity.	
DitchCondition	Text	255	Assessment of ditch condition along the segment. Inspect ditch stability, evidence of erosion.	
DitchOutlet	Text	255	Assessment of ditchline outlet for erosion, diversion potential, and hydrologic connectivity.	
HydrologicConnectivity	Short		Road feature is hydrologically connected to waters of the state. Evaluate direct routes of drainage to waters of the state, and the source of the runoff.	YesOrNo



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DiversionPotential	Short		Road feature has the potential to divert waters of the state. Assess the diversion potential for ditches and drainage features along road segment.	YesOrNo
EvidentErosionControl	Short		Erosion control strategies evident on road feature. Inspect erosion control used along the road prism to determine if the techniques are adequate in minimizing sediment delivery.	YesOrNo

Polygons

Polygon features represent FRIA Road Management Blocks. See Section 3.1.3 and 3.2.3 for minimum required and optional data elements, respectively.

Name	Type	Length	Description	Domain
RMBID	Text	255	Unique identifier for RMB polygon.	
RMBOwner	Text	255	RMB ownership.	
RMBName	Text	255	RMB name.	



Appendix B: Domain Descriptions

Condition – Options for condition.

<i>Code</i>	<i>Description</i>
0	Excellent
1	Good
2	Fair
3	Poor
4	Non-Functioning

CrossingMaterial – Dominant material type of crossing.

<i>Code</i>	<i>Description</i>
0	Plastic
1	Corrugated Metal Pipe
2	Structural Steel Pipe
3	Aluminum
4	Concrete
5	Wood
6	Other

CrossingType – Type of crossing.

<i>Code</i>	<i>Description</i>
0	Open Arch Culvert
1	Open Box Culvert
2	Round Culvert
3	Pipe Arch Culvert
4	Full Box Culvert
5	Multibarrel Culvert
6	Other Culvert Shape
7	Ford



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8	Bridge
9	Other

FishPassageAssessment – Fish passage assessment determined using methods described in ODF FRIA Technical Guidance.

<i>Code</i>	<i>Description</i>
0	Pre-existing
1	Potential barrier
2	Undetermined
3	Additional Review Requested

PreExistingCulvert – Options for indicating if a water crossing culvert is pre-existing.

<i>Code</i>	<i>Description</i>
0	No
1	Yes
2	Undetermined

RoadClassification – Road feature classification as defined by OAR 629-625-0900(6)(b).

<i>Code</i>	<i>Description</i>
0	Meets Forest Practices Act
1	Does Not Meet Forest Practices Act
2	Vacated in accordance with OAR 629-625-0650
3	Abandoned

RoadType – Road type as defined in OAR 629-600-0100.

<i>Code</i>	<i>Description</i>
0	Active/Inactive
1	Vacated
2	Abandoned



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StreamClassification – Classification of the stream being crossed as defined by OAR 629-625-0900(6)(a)(D)(ii).

Code	Description
0	Type F
1	Type SSBT
2	Type D
3	Type N

SurfaceType – Road surface material type. Paved roads included bituminous, concrete, or other hard surface. Surfaced roads are non-paved roads that are either aggregate base or crushed stone. Unsurfaced roads are soil-based roads.

Code	Description
0	Paved
1	Surfaced
2	Unsurfaced
3	Unknown

WaterCrossingClassification – Water crossing classification as defined by OAR 629-625-0900(6)(a)(D)(vi).

Code	Description
0	Fully Functioning
1	Minimal Risk
2	Imminent Risk
3	Undetermined

YesOrNo – Options for yes or no.

Code	Description
0	No
1	Yes