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Foothills Growth and Yield Association

Lodgepole Pine Regeneration Project

**FIELD MANUAL**

*VERSION 1.0*

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## 1. Project Overview

The general purpose of the Project is to forecast and monitor the growth and yield of regenerated lodgepole pine stands in relation to site, early crop performance and stocking, vegetative competition, and density regulation.

The Project is designed to answer the following questions:

- What are the relationships between early stand conditions (stocking, height growth, density, competition) and subsequent growth and yield?
- How does stand growth and yield respond to different levels of initial spacing and pre-commercial thinning?
- How do these responses and relationships vary across sites of primary interest?

The experimental objectives are:

1. Estimate the effects of site and establishment factors on early crop performance.
2. Estimate the effects of site and establishment factors on subsequent stand growth and yield.
3. Estimate the effects of early crop performance and density regulation on subsequent stand growth and yield.

The trial is a three-level split-plot design. It will initially consist of 90 field installations (5 ecosites x 6 spacings x 3 replications), with each installation split into 4 plots (vegetation management treatments). The three levels are described below.

Level A:

Installations within each of the 5 ecosite categories will be blocked into 3 geographic “groups”, to produce a total of 15 groups. Each group will consist of 6 installations having the same ecosite and similar climatic, edaphic, and site preparation characteristics.

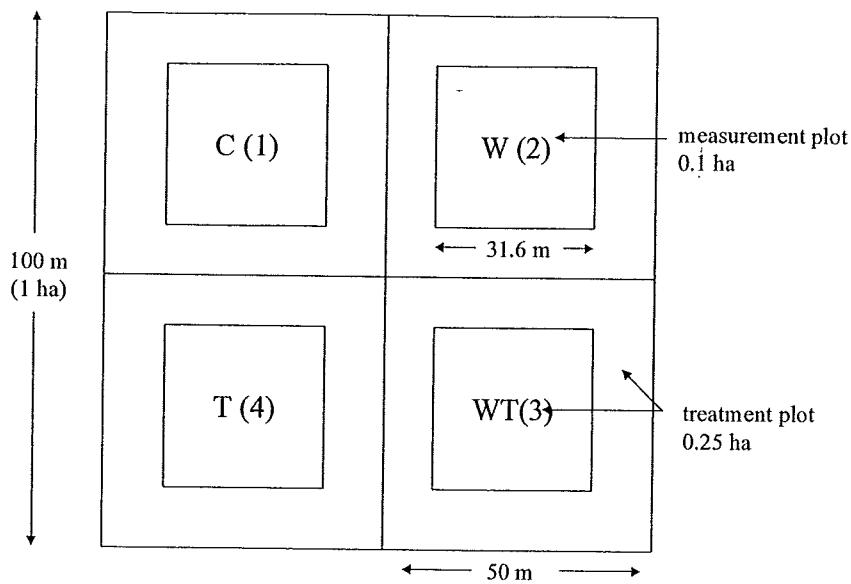
Level B:

6 installations (one for each spacing treatment) in each of the 15 “groups”.

Level C:

Each installation will be split two ways (weeding / no weeding and eventually thinning / no thinning) to produce 4 management treatment plots.

A diagram representing the preferred layout of an individual installation with 4 treatment and measurement plots is shown in Figure 1. The entire installation will be planted at one of six densities.



Treatment Plot 1 = C: Control  
 Treatment Plot 2 = W: Weeding  
 Treatment Plot 3 = WT: Weeding & Thinning  
 Treatment Plot 4 = T: Thinning

**Figure 1. Installation Diagram.**

**2. Sites and Treatments**

**2.1 Ecosite**

Table 1 shows the 5 ecosite categories, and references the associated field guides and natural sub-regions.

**Table 1. Five Ecosite Categories.**

	<b>Ecosite (and Edatope)</b>	<b>WC</b>	<b>SW</b>	<b>NSR</b>
1	Bearberry/lichen/hairy wild rye <i>(submesic/subxeric, medium-low)</i>	b,c	b	any
2	Labrador tea –mesic <i>(mesic-poor)</i>	d	c	UF LF
3	Billberry/cranberry/sarsaparilla/rhododendron <i>(mesic-medium)</i>	e	d	SA/UF LF
4	Honeysuckle/fern (subhygric-rich)	f	e	UF LF
5	Labrador tea-hygric <i>(hygric-poor)</i>	h	f	any

## 2.2 Management Treatments

Controlled management treatments include six specified planting densities (including a no planting “control”), and 4 vegetation management treatments (see Tables 2 & 3).

**Table 2. Spacing Treatments.**

Spacing # Code	Spacing (m <sup>2</sup> )	Density (stems/ha)	Trees/plot (0.25/0.1 ha)
1	Control	0	0
2	3.5	816	204/082
3	3.0	1111	278/111
4	2.5	1600	400/160
5	2.0	2500	625/250
6	1.5	4444	1111/444

**Table 3. Vegetation Management Treatments.**

1	C: Control	No vegetation management treatments
2	W: Weeding	Remove competing vegetation
3	T: Thinning	Pre-commercially thin to set spacing density
4	WT: Weeding & Thinning	Treatments 2 & 3 are carried out

## 3. Required Supplies and Equipment

The following is a basic list of supplies required for plot installation:

1. 5.0' conduit centre post (1 per measurement plot plus 1 for installation centre = 5 per installation). Two holes drilled (one at 5 cm from one end, the second 5 cm down from the first) for attaching plaque.
2. 5.0' lengths of conduit tubing (12 per installation, for outside blue protective buffer).
3. 5.0' lengths of conduit tubing (8 per installation, for orange buffer).
4. 5.0' lengths of conduit tubing (4 per measurement plot, 16 per installation - red).
5. 9-gauge, 45 cm pigtails. (Approximately 4200 per group of 6 installations. The number per installation will vary from about 320 to 1780 (80 to 444 per measurement plot), depending on the spacing treatment). It is optional but suggested that different colour pigtails be used for each treatment plot to aid in identifying plots in the field. Suggested colors are 1: Purple, 2: White, 3: Yellow, 4: Black. Marking Treatment plot centres and Establishment plot centre may be done with any type of tags, providing they clearly identify the treatment plots and are hardy enough to withstand weather and animal damage. Flat placards attached to the posts are not recommended due to animal browsing and wind.
6. 1.0 m lengths (longer length optional) of conduit tubing for marking regeneration plot centres (16 per measurement plot, 64 per installation - green).
7. Aluminum tags and wires for numbering seedlings, (approx. 4200 per group of 6 installations).

8. Paint: Blue, Orange Glo, Green, and Red. Ensure that proper type paint is used if applying to galvanized conduit.

Length of centre, corner and boundary posts, and the frequency of posts marking the external (blue) buffer, may be increased if field conditions warrant more visible demarcation i.e., high competition sites.

The following equipment is suggested:

1. Sledge hammer.
2. 50 m steel tape.
3. Laser distance measurement tool or total station (optional).
4. Staff compass (if total station not utilized).
5. Metal clipboard and tally sheets (or datalogger) .
6. Shovel.
7. Clinometer.
8. Altimeter (calibrated at least once daily).
9. Orange and blue flagging tape.
10. Field Guide to Ecosites of West-central or Southwestern Alberta (depending on location).

#### **4. Selection and Verification of Plot Locations**

##### **4.1 Cut Block Selection**

Initial selection will be based on sampling from a list of candidate cut-blocks that are available for planting in 2000 or 2001, are to be managed for lodgepole pine, and fall within one (or more) of the 5 ecosite categories (see Table 1). Sufficient information is required to locate the centroid of the block on the UTM grid, and to identify the most probable ecosite category. Useful additional information includes: pre-harvest assessment, area, natural sub-region, ecodistrict, confirmed ecosite(s), edatope, elevation, latitude, aspect, slope percent, slope position, soil classification, pre-harvest ecosite phase, pre-harvest site index, site preparation method and equipment, and proposed planting stock and season. ( All 6 installations in a “group” should have the same site preparation method and contractor. Planting stock type and time of planting should be homogenous between the six installations as well).

The preliminary selections require field checking to confirm that each cut-block within a group contains a minimum of 1 square hectare and meets the following conditions common to all other cut-blocks within the group:

1. Same ecosite category and position on edatopic grid.
2. Similar soil texture, drainage, and parent material.
3. Within 100 m elevation.
4. Slope less than 10%. (If slopes are greater than 10%, all slopes will be within a 5% variance).

5. Similar slope position: upper, mid, lower (if lower slope position, take particular care to ensure similar soil drainage and nutrient regime).
6. Similar aspect. Ensure commonality with respect to N versus S, and wind exposure, preferably within 45 degrees.
7. No evidence of significant differences in brush hazard.
8. Same method and time (season and calendar year) of site preparation, and preferably (but not necessarily) the same site preparation contractor.
9. Maintain a minimum buffer distance of 20 m from the treatment plots to block edges, roads, or other disturbances likely to create edge effects. No burning of slash piles should have occurred, or be scheduled, anywhere within the installation or (blue) protective buffer. If a suitable block is selected but has slash piles or residual timber, the option exists to move the slash and/or eradicate the residual timber.

In the event that candidate locations fail to meet these criteria, that access costs are prohibitive for some blocks, and/or that some blocks are geographically distant from the rest of the group, alternative blocks may be substituted for the candidate ones providing that the substitute blocks meet the above criteria. Where large cut blocks are available, and difficulty is encountered in identifying 6 blocks with common criteria, consideration may be given to locating more than one installation in a single cut block.

Typical, square, 4 treatment plot installations are often not possible to establish due to discontinuities in ecosites or one or more of the conditions listed above. In such situations the installation may be reconfigured so that the 4 treatment plots are in a line, staggered, or separated. Note that the requirement for buffering described in 9 above continues to apply. In split installations it is essential that treatment plots are carefully and clearly marked so that there is no confusion in the future as to what treatment should occur on what site. The treatment plots should be numbered clockwise from 1-4 starting with the most Northwesterly Plot as "Control" or Plot 1.

Determination of whether a block is sufficiently accessible will be left to the individual member. Although it is desirable to constrain allocation of plots as little as possible, it should be borne in mind that establishment of the installation creates a commitment to continual monitoring. Plots should be located only where the member is willing to pay for subsequent re-measurement.

#### **4.2 Locating the Plot Installation within the Cut Block**

1. Prepare a map of the cut block, delineating stand edges, roads, potential tie points, and boundaries of ecosite groups if available. Prepare a 50 m numbered dot grid that coincides with the scale of the map (1:5000 suggested).
2. Place the dot grid on the map, aligning the grid with the cardinal directions. Using a list of random numbers provided, match the first available number from the list with the same number on the dot grid that falls within the block and the desired ecosite group. Note the selected point.
3. Using a chain/tape and compass, locate the selected point on the ground. Verify whether the selected point lies within a homogenous 1 ha area meeting the 9 criteria listed in the previous

section by going to all four corners of the installation and doing a reconnaissance of the whole installation. Initially attempt to use the selected point as the installation centre. It is preferred, but not essential, that the installation be aligned with the cardinal directions.

4. If the location does not meet the 9 criteria, the installation centre may be moved to fit the installation into a homogenous area of the cutblock that will accommodate an installation. Invariably, instances will occur where installations will have to be “split” into two or more pieces to fit into homogenous areas.

### 4.3 Soil Assessment

Soils will be assessed and data collected at each treatment plot centre once the installation has been deemed to be a viable location. When trying to locate a suitable establishment/treatment plot location, dig or auger soil pits next to treatment plot centres (leave room for plot centre posts if not already in place). Assess the soil moisture and nutrient regime classes, following the procedures and keys provided in the ecosite guide for each geographic area. Ensure that the soil characteristics meet the requirements for the eco-site targeted as well as having similar characteristics as other installations from the same group. Additional checks may be located where required to ensure homogeneity of the site with respect to soil moisture and nutrient regime class. If an installation/treatment plot is to be installed in this location, the soil data may be collected at this time or left to collect on a subsequent site visit.

## 5. Installation Layout

### 5.1 Treatment Plots and the Installation Boundary

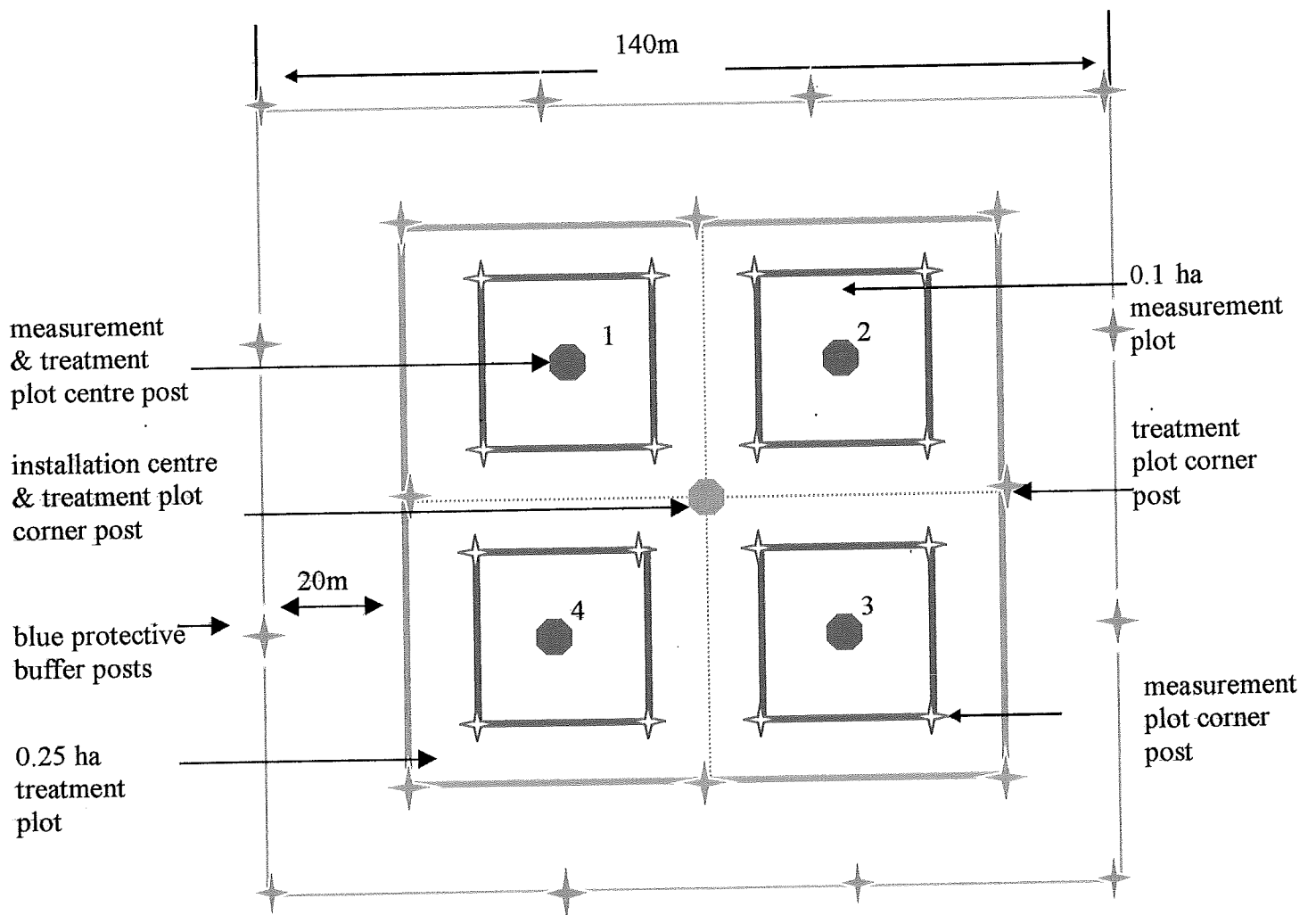
The following procedure applies to a normal installation aligned with the cardinal directions (see Figure 2). The procedure will need to be adjusted for installations not orientated in the cardinal directions, and for split installations. This layout method is optional as many contractors will be using Total Stations for their installations. Any method is acceptable as long as the plot layout is within the acceptable tolerances.

1. Locate the installation centre.
2. From the installation centre, establish a line @ 315 Az for 13.01 m. Establish this point with conduit pipe and paint **red**. This is the SE corner of measurement plot 1.
3. Continue from step 1, and measuring from the installation centre, establish a line @ 315 Az for 35.35 m. Establish this point with a conduit centre post. This is the centre of treatment and measurement plot 1.
4. Extend the line created in step 2 @ 315 Az from the installation plot centre for 57.70 m. Establish this point as the NW corner of measurement plot 1 and paint **red**.
5. Extend the line created in step 1 @ 315 Az from the installation plot centre for 70.71 m. Establish this point as the NW corner of treatment plot 1 and paint **orange**.
6. Extend the line created in step 1 @ 315 Az from the installation plot centre for 99 m. Establish this point as the NW corner of the protection buffer and paint **blue**.
7. Repeat steps 2-6, substituting 45 Az for 315 Az, this will establish plot 2 and the NE portion of the installation.



8. Repeat steps 2-6, substituting 135 Az for 315 Az, this will establish plot 3 and the SE portion of the installation.
9. Repeat steps 2-6, substituting 225 Az for 315 Az, this will establish plot 4 and the SW portion of the installation.
10. From the installation centre establish lines for 50 m north, south, east and west. Establish conduit posts at these points and paint **orange**.
11. Using the 5.0' conduit pole fill in the **blue** protective boundary by establishing poles less than or equal to 45 m apart.

**Note:** Check that the orange boundary is at least 20 m clear of any disturbance or edge that could effect the treatment plots.



**Figure 2: Installation Layout for an Installation with 4 Treatment and Measurement Plots.**

## 5.2 Measurement Plots

Lay out the four 0.1 ha measurement plots shown in Figure 2 as follows.

Plots 1 and 3:

1. Establish a staff compass at the NW corner of the measurement plot. Lay out a line 31.60 m at 180 degrees. Establish a conduit post here (SW corner).
2. Measure the distance to the SE corner established earlier. It should be 31.60 m. The allowable closure error cannot be greater than 35 cm.
3. Move the compass to the SE corner. Lay out a line 31.60 m long at 360 degrees. Establish a post here (NE corner).
4. Move the compass to the NE corner. An azimuth of 270 degrees and distance of 31.60 m should lead exactly to the NW corner. The allowable closure error cannot be greater than 35 cm. Measure the diagonal distance from the NW corner to the SE corner. If this distance is within 50 cm of the required 44.69 m, the plot layout is acceptable. If the distance is less than 44.19 m or greater than 45.19 m, the plot layout must be re-done.

Plot 2 and 4:

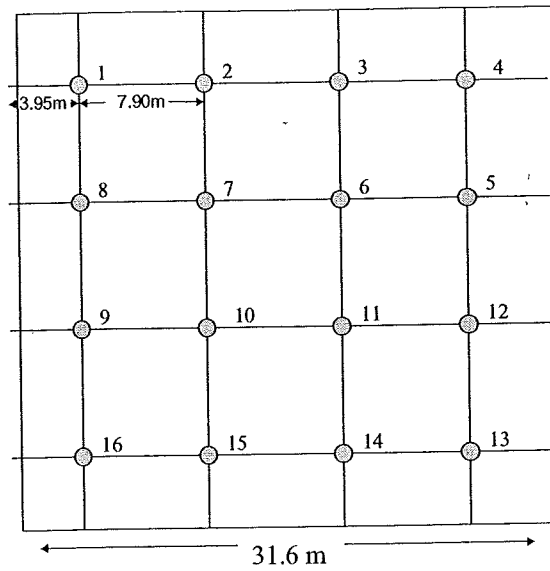
1. Establish the compass at the NE corner of the plot. Lay out a line 31.60 m at 180 degrees. Establish a conduit post here (SE corner).
2. Measure the distance to the SW corner established earlier. It should be 31.60 m. The allowable closure error cannot be greater than 35 cm.
3. Move the compass to the SW corner. Lay out a line 31.60 m long at 360 degrees. Establish a post here (NW corner).
4. Move the compass to the NW corner. An azimuth of 90 degrees and distance of 31.60 m should lead exactly to the NE corner. The allowable closure error cannot be greater than 35 cm. Measure the diagonal distance from the NE corner to the SW corner. If this distance is within 50 cm of the required 44.69 m, the plot layout is acceptable. If the distance is less than 44.19 m or greater than 45.19 m, the plot layout must be re-done.

The plot layout sequence and methods described here need not be followed specifically; however, distances and allowable error must not differ from those previously described. The procedure will need to be adjusted for plots not orientated in the cardinal directions.

Once the installation has been laid out, ensure all posts are firmly in place. Be sure the appropriate tag/plaque is securely established on each plot and installation centre post.

## 5.3 Regeneration Plots

Install centre posts (green) for 16 regeneration sub-plots in every measurement plot. This will require the layout of a 7.90 m square grid, commencing 3.95 m from the edge of the measurement plot (see Figure 3). This is best accomplished using a Total Station; However, accurate layout can also be done by having a crew member at each end of the plot holding the tape tight and a third person going along the tape and placing the regeneration posts at their appropriate locations.



**Figure 3. Layout of Regeneration Plots within the Measurement Plot.**

#### **5.4 Establishing a Tie point**

Once all work at the plot is completed, establish a tie point. Starting at the installation centre, accurately chain out to a natural or manmade tie point using a steel or nylon chain. All azimuths and distances must be recorded *from* the tie point *to* installation centre (or treatment plot centres if installations are split). Acceptable tie points are:

- a). Where roads cross creeks.
- b). The centre of road junctions.
- c). Where powerlines, pipelines, or seismic lines cross roads.
- d). Creek junctions.
- e). The point where roads enter into cutblocks.
- f). Established and marked block corners.
- g). Alberta Land Survey legal monuments.

### **6. Treatment Procedures**

#### **6.1 Planting and Initial Spacing**

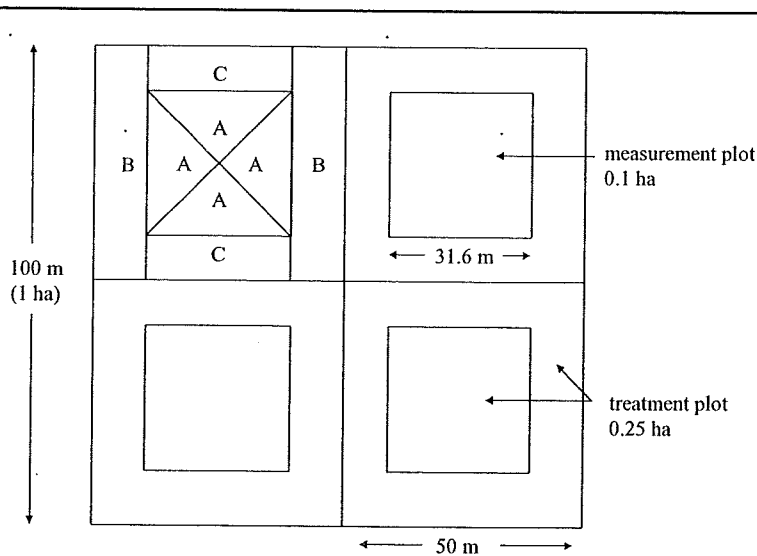
The whole installation (the four treatment plots, NOT the blue buffer) must be planted following the prescribed spacing and density (see Table 2). The blue buffer area should be planted to the operational density that is prescribed for the rest of the block.

All installations within a group should be planted in the same season, with the same type of planting stock. If possible the same planting crew should plant all six installations within a group. If the block has already been planted in the same season, trees may be filled in or culled to achieve the required density.

Planters may deviate by up to one metre from the theoretical planting location implied by the required spacing, in order to select suitable microsites. The specific method for meeting the required densities will be left to the discretion of the contractor. The recommended approach for controlling planting density is no formal grid; but instead divide and string the treatment plot into segments, and control the number of trees by segment. In Figure 4, the segments are illustrated in the NW treatment plot of the installation. The areas of each segment are as follows:

- a). 0.0250 ha
- b). 0.0460 ha
- c). 0.0290 ha

Therefore, to obtain the required number of seedlings in each, multiply the required density (stems/ha) by the appropriate segment area.



**Figure 4. Recommended Approach for Controlling Planting Density.**

**Close supervision of the planting crew(s) is essential to ensure the planting objectives are met.**

### 6.1.1 Fill-in Planting

In order to maintain as closely as possible the targeted initial spacing, fill-in planting may be required to replace planted trees that have died. Fill-in planting should take place during normal and appropriate planting seasons and conditions. Nursery stock (the same type as original planting) or transplants may be used. Transplants are to be done with planted stock, not natural regeneration. Transplants should be from outside the blue buffer area.

The decision whether fill-in planting is required will be based on annual mortality checks. Fill-in planting will not be continued after the third growing season.

## **6.2 Vegetation Management – Weeding**

Weeding will be conducted on treatment plots 2 and 3 of every installation, as required, to maintain brush competition below specified index values.

### 6.2.1 Treatment Method

The selected primary treatment method is backpack (ground) fall foliar spraying with glyphosate. Basal bark application of triclopyr ester may also or alternatively be used where aspen competition exceeds specified thresholds (see below).

Glyphosate (trade name *Vision*) is a non-selective, post emergent, systemic herbicide that is extensively used on forestry to control a wide range of annual and perennial grasses, broadleaf weeds and woody plants.

Triclopyr (trade name *Release*) is a selective, post emergent, systemic herbicide that can be used for highly selective control of woody plants and broadleaf weeds in woodlands.

Fall foliar spraying of glyphosate may be undertaken August to mid-September. This is after lodgepole pine buds have formed and hardened off. Grasses and weeds are still susceptible to herbicide at this time, and there is thus little chance of any herbicide injury to conifers. Woody plants may be less susceptible to glyphosate than to triclopyr, especially with fall application.

The decision to apply herbicide will be made on plot-by-plot basis. (Each treatment plot is 0.25 ha.) Once the decision is made to spray a plot with glyphosate, normally the entire 0.25 ha will be sprayed. Triclopyr will be applied selectively to targeted woody plant species.

Application rates and concentrations will be determined by expert evaluations of site, crop and vegetation data gathered during the two years prior to application.

### 6.2.2 Competition Index and Treatment Thresholds

Competition index (CI) will be measured and computed annually on all plots for at least the first 3 growing seasons, and thereafter periodically as required. Separate assessments are made for the shrub/herb layer and deciduous tree competition.

The measurement procedures facilitate the computation of a number of different CI systems. At least initially, the following simple static index will be used, based on the work of Comeau<sup>1</sup>:

$$CI = ((\%C_1 \times H_1) + (\%C_2 \times H_2) + (\%C_3 \times H_3) + (\%C_4 \times H_4) + (\%C_5 \times H_5)) / CTH$$

where:

CI = competition index for a single crop tree;

%C<sub>n</sub> = percent cover for the nth competitor species within a specified radius of the crop tree (1 m for herbs and shrubs and 2 m for deciduous trees);

H<sub>n</sub> = modal height of the nth competitor species in cm;

CTH = height of the crop tree in cm.

A maximum of 5 competitor species will be included in each calculation, and to qualify the species must have a cover of at least 5%. The average of individual crop-tree indices will be computed for each treatment plot.

Based on provisional expert opinion, validated by experimental data provided by Weldwood of Canada, the following CI values will be used as a guide to determine the need for herbicide application to a treatment plot:

shrub and herbs:	60
deciduous trees:	100

If only a portion of a treatment plot exceeds these thresholds, treatment may be considered to avoid creating variability within the plot. If the density of aspen exceeds 400 stems per ha, even if the CI is less than 100, consideration may be given to removing these trees using basal bark application of Triclopyr. The final decision to spray a plot should be based on assessments made earlier in the same season. Installations which, based on the previous year's assessments or local knowledge of the sites, are candidates for vegetation control, should be queued first for measurement. This will provide a window for assessment, making the spray decision, and spraying, if required, by mid September.

Application of the above threshold values are expected to result in a maximum of about 40% of the brushing treatment plots requiring treatment. This equates to a total of 20 ha for the entire field trial. No herbicide application is expected to be required prior to the fall of 2002.

### 6.2.3 Regulatory Approval Process for Herbicide Use

For the purposes of regulatory planning and approval by the Government of Alberta, all herbicide treatments for the Regenerated Lodgepole Pine Trial will be reviewed, approved, monitored and reported as a single Industrial Evaluation Project. The Association's Coordinating Agency will prepare the industry proposal, with input from the Technical Committee and approval of the Steering Committee. The proposal will be developed according to requirements outlined in the *Forest Management Herbicide Reference Manual* (Alberta Environment, Land and Forest Services, February 2001). No public involvement or notification

<sup>1</sup> Comeau, P. 1993. *Competition indices in decision-making*. Proceedings: NIVMA AGM.

will be required, because the Project is expected to involve not more than 20 ha of herbicide treatment. (This may be subject to further review if annual treatments consistently exceed the 20 ha limit.) The Coordinating Agency will prepare and submit a single monitoring report each year, in conformance with provincial guidelines and a monitoring reporting plan submitted as part of the Project proposal. The monitoring plan will include monitoring and reporting obligations for individual members, consistent with their roles and responsibilities as specified in the Memorandum of Agreement among Association members.

The Project plan will cover the entire period over which herbicides are expected to be required to establish crop trees on the brushing treatment plots. However, approval will be granted on an annual basis, and subject to annual review, with revisions if justified.

#### 6.2.4 Implementation

Individual members are responsible for implementation of trials on their tenured lands. All application of herbicide must be conducted by a registered pesticide applicator certified for forestry applications under the Alberta Environmental Protection and Enhancement Act. It is expected that members may wish to collaborate in the retention and contracting of applicators, because of the small areas requiring treatment on any one tenure.

### **6.3 Vegetation Management – Thinning**

Thinning will be conducted on treatment plots 3 and 4 of each installation (except the unplanted control installations) if, owing to natural ingress, the lodgepole pine densities exceed the target spacing values for the plot. Only sufficient trees will be thinned to return the coniferous density (stems per ha of lodgepole pine) on the treatment plot to the target spacing value.

Thinning schedules and prescriptions will be developed, depending on the rate and extent of ingress occurring during the next 5-10 years. No thinning is expected to be undertaken during the first 5 years.

## **7. Referencing and Numbering Conventions**

### **7.1 Plots**

Each installation will be uniquely referenced by a 3-digit numeric code:

1. Ecosite category (valid codes 1 – 5).
2. Group number (valid codes 1 – 5, expandable if additional replications added).
3. Spacing (valid codes 1 – 6: 1 = no planting, 2 = 3.5m/816spha, 3 = 3.0m/1111spha, 4 = 2.5m/1600spha, 5 = 2.0m/2500spha, 6 = 1.5m/4444spha)

In the database each installation header will also contain the Alberta standard cut block location code (opening number). This opening number is made up of the following:

- Meridian (4-6);

- Range (01-30);
- Township(001-126);
- Section Number (01-36);
- Grid Coordinate Number (00-99); and
- Dummy Number (A-C, or blank).

Measurement and treatment plots will be numbered 1 – 4, starting with the most Northwesterly and going clockwise. Corresponding treatments are as follows:

1. No weeding, no thinning.
2. Weeding, no thinning.
3. Weeding and thinning.
4. Thinning, no weeding.

This numbering convention with applicable treatments is to be applied in all situations, as per the manual, with no exceptions.

Regeneration sub-plots in each measurement plot will be numbered 1-16 (see Figure 3 under 5.3 Regeneration Plots).

## 7.2 Seedlings

All seedlings planted within **measurement** plots will be pinned and numbered, using 9-gauge 45 cm painted wire pins, aluminum tags and wires. This will involve approximately 4200 trees per group of 6 installations, and a maximum of about 1776 per installation. Numbering within an installation will be consecutive and continuous, i.e.; If measurement plot #1 had seedlings numbered 1-444, measurement plot #2 seedling numbering would start at 445 NOT 1. Pins should be consistently placed 20 cm North of seedlings to reduce confusion with ingress. Seedlings must never be painted.

If a naturally regenerated seedling is replacing a planted crop tree, the ingress tree will be tagged and given a new unique number. The replacement will be considered to have occurred if the previous crop tree has died, or it has been otherwise overtaken by another tree with superior height, diameter, and health. Tags with tree numbers will be retained on both the original and the candidate replacement crop tree.

## 8. Measurements

Table 4 identifies when measurements are required during the first 5 years of the trial. Ten categories of measurement are recognized. Note that timing of measurements is expressed in growing seasons completed after planting. Measurements should be made at the end of the growing season, following terminal bud set.



The required information for Growing Season 0 should be collected for all installations at the time of establishment (or earlier in the case of site index). If an installation is established with cold-stored stock and planted in the Spring of 2001 so that the trees flush in the 2001 growing season, the measurements indicated for Growing Season 1 should also be made in 2001, following bud set. If an installation is planted late in the season with set trees, the measurements for Growing Season 1 should be made after bud set in 2002.

**Table 4. Timing of Required Measurements**

Measurement Category	Growing Season					
	0	1	2	3	4	5
Planting density	x					
Coniferous density		x		x		x
Coniferous stocking		x		x		
Competition – shrubs and herbs	x	x	x	x		x
Competition – deciduous trees	x	x	x	x		x
Size and growth	x	x		x		x
Vigor	x	x	x	x	x	X
Health	x	x		x		X
Age						X

### 8.1 Data Collection/Submission Methodology

The data required for this trial can be collected using a digital data collection device or manual tally sheets. *This section will have data model information added at the end of the 2001 field season, any interim questions, comments, or concerns can be relayed to the Database Administrator via the Field Coordinator.*

#### 8.1.1 Introduction

The Foothills Model Forest (FMF), and specifically the Geographic Information Systems (GIS) department will act as the central loading, storage, and distribution agency for the Foothills Growth and Yield Association (FGYA). To date GIS personnel have worked closely with the Association to develop a standard data model that defines what information is to be collected, the standard field codes and ranges and the structure of how it is to be delivered to the FMF. The objective is to ensure that all relevant data are being collected and it is being done so in a standardized fashion so as to facilitate easy amalgamation into a single database.

It is expected that there will be continual changes to the database design to keep up with the changing needs of the association and address questions that arise during the installation and measurement of the plots. Therefore this document will be updated on an as needed basis to accommodate those changes.

#### 8.1.2 Database Design

A formal database design process was initiated to develop a standard data model to house all the information collected for the installations. The benefits of a formal design process are as follows:

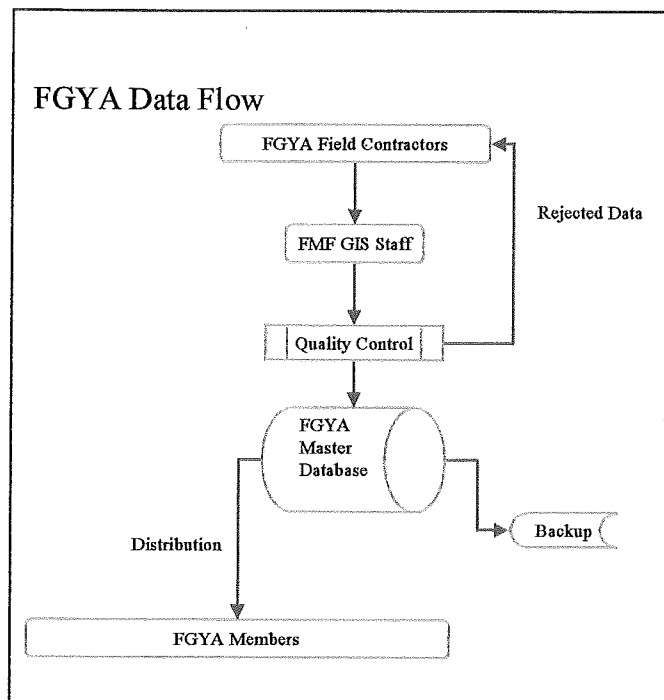
- Set a standard for what data is to be collected
- Set standards for codes and ranges used in data collection
- Ensure database integrity
- Minimize data redundancy

An entity relationship (ER) diagram was created from the design process. This document illustrates how the data will be stored in the master FGYA database. See Appendix II for the ER diagram.

As changes to the model are anticipated, change requests to the model will be directed through the field co-ordinator and then to the FMF. The changes will be implemented and new documentation for those changes will be distributed again, through the field co-ordinator.

### 8.1.3 Data Flow

The diagram below describes the flow of installation data from the contractors through to the company.



**Figure 5. Flow chart showing the Foothills Growth and Yield Association Data Flow.**

Installation data collected by the contractors will be provided to the FMF in a standard file format. Those data will be loaded and quality control measures taken at the time of loading. If non-standard data are detected the files will be returned to the contractor to be resolved. Once

the data have been loaded the database will be backed up and then distributed to the contributing members.

#### 8.1.4 Data Formats

Data delivered to the FMF must be comma delimited ASCII files. The first row in the ASCII file will contain the table field names. See Appendix III for a sample file. This format will ensure that issues surrounding software and software versions are avoided. For the installation year the contractor will provide a minimum of nine, and a maximum of twelve (three optional) individual ASCII files. After the installation is complete and re-measurement takes place in subsequent years the number of files will be reduced to a minimum of two files and a maximum of four (two optional).

The table below lists the loading table name in the database, a description and a naming convention that must be followed by the contractors for delivery of the data to the FMF.

**Table 5. List of Loading Table Names, Descriptions and Naming Conventions.**

Load Table	Description	Naming Convention
Installation	Installation level (required first year only)	<contractor>_ddmmyy_installation
TreatmentPlot	Treatment plot level (required first year only)	<contractor>_ddmmyy_treatmentplot
Ecological	Treatment plot ecological (required first year only)	<contractor>_ddmmyy_ecological
Planting	Treatment plot planting treatment (required first year only)	<contractor>_ddmmyy_planting
BlockInfo	Block (opening) reference (required first year only)	<contractor>_ddmmyy_blockinfo
SiteIndex	Treatment plot site index (required first year only)	<contractor>_ddmmyy_siteindex
RegenPlot	Regeneration plot level	<contractor>_ddmmyy_regenplot
Trees	Tree level	<contractor>_ddmmyy_trees
StemMapping	Tree stem mapping (optional, and only required once)	<contractor>_ddmmyy_stemmapping
Tending	Treatment plot tending treatments (required only at re-measurement when tending has occurred)	<contractor>_ddmmyy_tending
Photos	Treatment plot photographs (required first year only, optional at re-measurement)	<contractor>_ddmmyy_photos
Trees_fillplant	Tree replacement/fill planting (optional at installation if fill planting occurred)	<contractor>_ddmmyy_fillplant

See Appendix IV for detailed listings of the file structure and descriptions for all fields.

### 8.1.5 Data Loading

Data contained in the ASCII files delivered to the FMF will be loaded into the master database using a combination of manual and automated processes. ASCII files will be manually imported into the database and then programs will be run to disseminate the data into the data model.

### 8.1.6 Quality Assurance

Quality assurance will occur at two points in the data loading process. First, during the process of loading the data from ASCII files into the database, checks will be made to ensure the incoming structure meets the standard. Second, during the dissemination process the loading programs will check for invalid codes, unreasonable measurements, missing data etc. In the event errors are found the records will be flagged as rejected and the entire file will be returned to the contractor to be resolved.

Obviously, the quality assurance process can *not* include checks for incorrect collection.

### 8.1.7 Data Management

Management of the master FGYA database will be the responsibility of the FMF GIS staff. They will perform the data loading, quality control, security, backup and distribution of the database.

### 8.1.8 Software

To date development of the FGYA database has occurred in Microsoft Access 97. Design and documentation has occurred in Microsoft Visio 2000 Enterprise. Access was chosen as the database system for the following reasons:

- most FGYA members are familiar with the software
- data can be easily read by and/or ported to mainstream analysis tools such as Microsoft Excel, Statistical Analysis System (SAS) etc.

Initially the installation data will be stored in Access. If the needs of the database exceed the capabilities of Access (e.g. speed, size etc.) the database will be ported to Oracle.

### 8.1.9 Distribution

The data will be distributed to the member companies upon request. Note that a reasonable amount must be allowed to perform the data loading and quality control processes after the data has been delivered to the FMF. It is not unreasonable to expect the data to be ready for distribution by mid November if all measurements are complete and delivered by mid September. The loading period should decrease after the first year as the number of files lessens and the process becomes more automated.

**8.1.10 Administration/Site History**

This information will be collected in the field where applicable. However, information from the member will be necessary to fill out many of the fields in this section. Many fields require collection at the treatment plot level (four separate measurements per installation), while this may seem redundant it is necessary to capture all information on installations in which the treatment plots are separated.

**1. Agency:**

- Enter the member company the installation is for.
- Where collected/applicability: Installation.

Example: WEYGP (Weyerhaeuser Grande Prairie)

Agency Code	Agency
ANC	Alberta News Print Company
BRL	Blue Ridge Lumber
CFPGP	Canadian Forest Products Grande Prairie
MWFP	Millar Western Forest Products
SDA	Sundance Forest Products
SLS	Spray Lakes Sawmills
SPI	Sunpine Forest Products
WEYDV	Weyerhaeuser Drayton Valley
WEYED	Weyerhaeuser Edson
WEYGP	Weyerhaeuser Grande Prairie
WWC	Weldwood of Canada

**2. Installation Date:**

- Enter the date that the installation was established in the field.
- Where collected/applicability: Installation.

Example: 2001/07/15

**3. Target Eco-Class:**

- Enter the targeted eco-class code for the installation (1-5) See Pg.5, Section 2.1, Table 1
- Where collected/applicability: Installation.

Example: 4

**4. Target Group:**

- Enter the target geographic grouping code (1-5) as assigned by the FGYA.
- Where collected/applicability: Installation.

Example: 2

**5. Target Tree Density:**

- Enter the prescribed “target” density (stems/ha) for the installation.
- Where collected/applicability: Installation.

Example: 1600

**6. Contractor:**

- Enter the name of the contract company installing the plot.
- Where collected/applicability: Installation.

Example: Integrity Consulting Ltd.

**7. Crew Initials (1 and 2):**

- Enter the initials of the crew members installing the plot.
- Where collected/applicability: Installation.

Example: RTY        HYU

**8. ISP Number:**

- Enter the Industrial Sample Plot protection number.
- Where collected/applicability: Installation.

Example: ISP010031

**9. Tie Point Description, Azimuth, Distance, UTM Coordinates:**

- Enter a description of tie point location, the azimuth and distance in Metres from the Tie Point TO the treatment plot centre. Collect the UTM coordinates of the tie point using a gps. (UTM Nad 83 Zone 11, Alberta/BC).
- Where collected/applicability: Treatment plot.

Example: T.P.#1 located at the “y” intersection of the big and little Berland roads. 256 metres @ 125° from T.P.#1 to treatment plot #2 centre. T.P. # 1 GPS Coordinates UTM N:5897643 E:675653.

**10. Treatment Plot Centre UTM Coordinates & Plot Orientation:**

- Collect the UTM coordinates of each treatment plot centre using a gps. (UTM Nad 83 Zone 11, Alberta/B.C.), Record the azimuth of an imaginary line running through regeneration plots 4, 5, 12, & 13 (This would be the azimuth of the East Boundary on a typical installation).
- Where collected/applicability: Treatment plot.

Example: Treatment Plot #1 UTM N: 5897643 E:675632, Orientation: 360°

**11. Tree Count Total:**

- Record the total number of trees planted within each Treatment plot (orange boundary).
- Where collected/applicability: Treatment plot.

Example: 1600

**12. Elevation:**

- Record the Elevation in Metres (A.S.L.) at each Treatment plot centre.
- Where collected/applicability: Treatment plot.

Example: 1600

Precision: +/- 50 m

**13. Slope Percent:**

- Record the average % slope of each Treatment plot.
- Where collected/applicability: Treatment plot.

Example: 7%

Precision: +/- 5%

**14. Aspect:**

- Record the general aspect in degrees for each Treatment plot.
- Where collected/applicability: Treatment plot.

Example: 350°

Precision: +/- 10°

**15. Slope Position:**

- Record the meso-slope position code for each Treatment plot.
- Where collected/applicability: Treatment plot.

Example: F

Slope Position Codes	Code Descriptions
C	Crest
D	Depression
F	Level/flat
L	Lower slope
M	Middle slope
T	Toe
U	Upper slope

**16. Natural Subregion:**

- Record the natural sub-region code for each Treatment plot.
- Where collected/applicability: Treatment plot.

Example: SWLF

Natural Subregion Codes	Code Description
SWLF	South West, Lower Foothills
SWSA	South West, Subalpine
SWUF	South West, Upper Foothills
WCLF	West Central, Lower Foothills
WCSA	West Central, Subalpine
WCUF	West Central, Upper Foothills

**17. Planting Start and End Dates:**

- Record the dates when planting was started and completed in the treatment plot.
- Where collected/applicability: Treatment plot.

Example: May 15, 2001 – May 17, 2001

**18. Seedlot:**

Alberta seedlot numbers are composed of:

- Owner/township/range/meridian/year of collection
- Record the Alberta Seedlot Number for the stock planted on the treatment plot.
- Where collected/applicability: Treatment plot.

Example: WW 50-21-5-87

**19. Stock Code:**

- Record the Stock Code for the stock planted on the treatment plot.
- Where collected/applicability: Treatment plot.

Example: BRP + 1



Stock Code	Description	Stock Code	Description
BB	Bare Root (3+0)	S211	Styroblock 211
BRP + 1	Bare Root Plug + 1	S211A	Styroblock 211A
BRP1.5	Bare Root Plug + 1.5	S211B	Styroblock 211B
BRT	Bare Root Transplant	S211P	Styroblock 211P
C40CC	Spencer Lemaire	S310	Styroblock 310
C45CC	Spencer Lemaire	S310B	Styroblock 310B
C50CJ	50 cc Jiffy	S310P	Styroblock 310P
C65CC	Spencer Lemaire	S312	Styroblock 312
C78CJ	78 cc Jiffy	S313	Styroblock 313
C90CC	Spercer Lemaire	S313A	Styroblock 313A
C90CJ	90 cc Jiffy	S313B	Styroblock 313B
CARC	ARC Sausage	S313C	Styroblock313C
CBCC	CBCC	S313E	Styroblock 313E
CDR100	Drader 100	S313P	Styroblock 313P
CDR200	Drader 200	S315	Styroblock 315
CDR75	Drader 75	S315B	Styroblock 315B
CDRAE	Drader	S323	Styroblock 323
CJIFFY	Jiffy Pots	S400CU	Styroblock 410 Copper Treated
CJP36	Jiffy Pots P36	S410	Styroblock410
CKH	King Horns	S410A	Styroblock 410A
CLTRANS	Container Transplant	S410B	Styroblock 410B
CMINI	Mini Container	S410C	Styroblock 410C
CONT	Container	S410M	Styroblock 410M
CONTT	Ontario Tubes	S410P	Styroblock 410P
CP + 1	Container Plug + 1	S411	Styroblock 411
CP + 1.5	Container Plug + 1.5	S412	Styroblock 412
CP + 2	Container Plug + 2	S412A	Styroblock 412A
CPNTH	Panth	S412CU	Styroblock 412A Copper Treated
CPP	Paper Plots	S412D	Styroblock 412D
CPSB	CPSB	S415	Styroblock 415
CXL410	CXL410	S415B	Styroblock 415B
S 10075	Styroblock CS10075	S415D	Styroblock 415D
S100	Styroblock S100	S512	Styroblock 512
S112	Styroblock CS112	S515	Styroblock 515
S11280	Styroblock CS11280	S615	Styroblock 615
S121	Styroblock CS121	S615B	Styroblock 615B
S16060	Styroblock CS16060	SQ	Styroblock
S16065	Styroblock CS16065	SQ100	Styroblock Q100
S18070	Styroblock CS18070	SQ75	Styroblock Q75

## 20. Planting Season:

- Record the season for the stock planted in each Treatment plot.
- Where collected/applicability: Treatment plot.

Example: Spring (Will flush and grow again in same season)

**21. Harvesting Start and End Dates:**

- Record the dates when harvesting was started and completed in each Treatment plot.
- Where collected/applicability: Treatment plot.

Example: May 15, 2000 – June 4, 2000

**22. Harvesting Type/Method:**

- Record the type/method of harvesting that was used in each Treatment plot.
- Where collected/applicability: Treatment plot.

Example: MLS

Harvest Type	Description
HFV	Harvester, forwarder
HGR	Hand fall, grapple skidder
HLS	Hand fall, line skidder
MGR	Feller buncher, grapple skidder
MLS	Feller buncher, line skidder

**23. Site Preparation Start and End Dates:**

- Record the dates on which site preparation was started and completed in the treatment plot.
- Where collected/applicability: Treatment plot.

Example: May 15, 2001 – May 17, 2001

**24. Site Preparation Contractor:**

- Enter the name of the contract company site preparing the treatment plot.
- Where collected/applicability: Treatment plot.

Example: Bottomless Pit Mounding Co.

**25. Site Preparation Type/Method:**

- Record the type/method of site preparation that was used on the treatment plot.
- Where collected/applicability: Treatment plot.

Example: MODO (Donaren Mounding).

Site Prep	Description		
BLAD	Blade	MODP	Mounder – Dual
BLBR	Blade – Brush rake	MOEC	Mounder – EC
BLMO	Blade – Modified	MOEH	Mounder – Excavator Hoe
BLRT	Blade – Hensley	MOLA	Mounder – Lannen
BLSH	Blade – Shear	MOOJ	Mounder – Oje Hogen
BLST	Blade – Straight	MOTT	Mounder – Terra Tech
CHEM	Chemical	MOUN	Mounder – Unknown
DIHD	Disk – Harrow -	PLCH	Plow – C&H

Site Prep	Description		
DIHS	Disk – Harrow -	PLCM	Plow – C&H Modified/Vinge
DIKT	Ditching – Koppo	PLCP	Plow – C & S Ripper – Plant
DIMA	Ditching – Martini	PLCR	Plow – Crossley
DIPA	Disk – Passive	PLCS	Plow – C & S Ripper – Seed
DIPO	Disk – Powered	PLDV	Plow – DV
DRAG	Drag	PLMA	Plow – Martini
DRHV	Drag – Heavy	PLOW	Plow Unknown
DRLT	Drag – Light	PLSB	Plow – Savanna Bedding Plow
DRSF	Drag – Shark Fin	PLSH	Plow – Shear
HAMM	Hand – Motor	PLSR	Plow- Single Row Bedding
HAND	Hand Scalped	PLSS	Plow – Winged Sub Soiling
MICH	Mixer – Marsden	SPBR	Spot – Bracke
MIER	Mixer – Excavator	SPLE	Spot – Leno
MIGR	Mixer – Grizzly	SPSI	Spot – Sinkilla
MIMC	Mixer – Merri	UNK	Unknown
MIMU	Mixer – AZ Forester		
MIVM	Mixer – VM Mulcher		
MOBC	Moulder –		
MOBU	Moulder – Butler		
MOCA	Moulder – CA		
MODE	Moulder – Ditching		
MODO	Moulder – Donaren		

## 26. Site Preparation Density:

- Enter the site preparation target density where applicable.
- Where collected/applicability: Treatment plot.

Example: 1600 mounds/ha.

## 27. Target Treatment:

- Enter one of the four treatment regimes for each treatment plot.
  1. Control
  2. Weed
  3. Thin
  4. Weed and Thin
- Where collected/applicability: Treatment plot.

Example: 1. Control

## 28. Treatment Type:

- Record the treatment type for each treatment plot.
- Where collected/applicability: Treatment plot.

Example: BR (Brushing)

Tending Type	Description
BR	Brushing
FE	Fertilization
ID	Insect/disease control
JS	Juvenile spacing
PR	Pruning
SP	Seedling protection

**29. Treatment Method. (The tool or medium used to carry out the treatment):**

- *Will be updated at a later date.*

**30. Treatment Detail (herbicide types etc.):**

- *Will be updated at a later date.*

**31. Treatment Intensity.(l/ha, kg/ha, girdling density, etc.):**

- *Will be updated at a later date.*

**32. Treatment Start and End Dates:**

- Record the dates on which the treatment was started and completed in the treatment plot.
- Where collected/applicability: Treatment plot.

Example: August 15, 2001 – August 17, 2001.

**33. Treatment Contractor:**

- Enter the name of the contract company treating the plot.
- Where collected/applicability: Treatment plot.

Example: Double Vision Herbicide Applicators Inc.

**34. Crew Initial:**

- Enter the initials of the contractor performing the treatment on the plot (if applicable).
- Where collected/applicability: Treatment plot.

Example: RTY (Initials of pilot doing aerial spraying of herbicide).

**8.1.11 Soils**

Soil data is to be collected at each Treatment plot centre. The “check” pits are to be done in locations where changes in soil characteristics are suspected. There is a comments area in the data model if anomalies are encountered such as small deviances in soil types, which don’t warrant plot adjustment or re-location.

### 35. Parent Material:

- Record the Parent Material (Mode of deposition) for each Treatment plot.
- Where collected/applicability: Treatment plots.

Example: LT

Parent Material Codes	Code Descriptions
C	Colluvium
E	Eolian
F	Fluvial
FE	Fluvioeolian
FL	Fluviolacustrine
GF	Glaciofluvial
GL	Glaciolacustrine
L	Lacustrine
LT	Lacustro Till
M	Morainal Till
O	Organic
R	Rock
S	Saprolite

### 36. "L" Layer Thickness:

- Record the average thickness of the litter layer.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 2 cm

Precision: +/- 1 cm

### 37. "F" Layer Thickness:

- Record the average thickness of the fermented layer.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 5 cm

Precision: +/- 1 cm

### 38. "H" Layer Thickness:

- Record the average thickness of the humus layer.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 3 cm

Precision: +/- 1 cm

**39. Humus Form:**

- Record the predominant humus form. (\*Can use basic Mor, Modor, Mull if can't determine humus form accurately)
- Where collected/applicability: Treatment plot centre soil pit.

Example: Lignomoder

Humus Forms	
FIBRIMOR	LIGNOMOR
HEMIMOR	MESIMOR
HUMIMOR	MORMODER
HYDROMODER	MULLMODER
HYDROMOR	RESIMOR
HYDROMULL	RHIZOMULL
LEPTOMODER	SAPRIMODER
LIGNOMODER	VERMIMULL
*MOR	*MODER
*MULL	

**40. "A" Horizon Modifier(s):**

- Record up to three applicable horizon modifier(s) for the "A" layer.
- Where collected/applicability: Treatment plot centre soil pit.

Example: "A" horizon modifier code #1 = h

- Acceptable horizon modifiers: b, c, ca, cc, e, f, g, h, I, k, m, n, p, s, sa, t, u, x, y, z

**41. "A" Horizon Thickness:**

- Record the average thickness of the "A" Horizon.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 6 cm

Precision: +/- 1 cm

**42. "A" Horizon Texture:**

- Record the texture of the fine fraction (particles less than 2 mm diameter) of the soil in the "A" horizon.
- Where collected/applicability: Treatment plot centre soil pit.

Example: Sandy clay loam

Texture Codes	Textures
C	Clay
CL	Clay loam
fSL	Fine Sandy Loam
HC	Heavy clay
L	Loam

Texture Codes	Textures
LS	Loamy sand
S	Sand
SC	Sandy clay
SCL	Sandy clay loam
Si	Silt
SiC	Silty clay
SiCL	Silty clay loam
SiL	Silty loam
SiS	Silty sand
SL	Sandy loam

**43. “B” Horizon Modifier(s):**

- Record up to three applicable horizon modifier(s) for the “B” layer.
- Where collected/applicability: Treatment plot centre soil pit.

Example: “B” horizon modifier code#1 = t , code #2 =j

- Acceptable horizon modifiers: b, c, ca, cc, e, f, g, h, I, k, m, n, p, s, sa, t, u, x, y, z

**44. “B” Horizon Thickness:**

- Record the average thickness of the “B” Horizon.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 46 cm

Precision: +/- 1 cm

**45. “B” Horizon Texture:**

- Record the texture of the fine fraction (particles less than 2 mm diameter) of the soil in the “B” horizon.
- Where collected/applicability: Treatment plot centre soil pit.

Example: SCL

Texture Codes	Textures
C	Clay
CL	Clay loam
FSL	Fine Sandy Loam
HC	Heavy clay
L	Loam
LS	Loamy sand
S	Sand
SC	Sandy clay
SCL	Sandy clay loam
Si	Silt
SiC	Silty clay
SiCL	Silty clay loam

Texture Codes	Textures
SiL	Silty loam
SiS	Silty sand
SL	Sandy loam

#### 46. Moisture Regime:

- Record the numeric value for the relative moisture regime appropriate for the soil pit. This value “should” match the edatopic grid position (moisture regime) of the targeted eco-class for the establishment.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 4

Moisture Code	Moisture Regime RegimeDescription
2	Xeric
3	Subxeric
4	Submesic
5	Mesic
6	Subhygric
7	Hygric
8	Subhydric
9	Hydric

#### 47. Nutrient Regime:

- Record the letter code for the relative nutrient regime appropriate for the soil pit. This value “should” match the edatopic grid position (nutrient regime) of the targeted eco-class for the establishment.
- Where collected/applicability: Treatment plot centre soil pit.

Example: B

Nutrient Code	Nutrient Regime
A	Very Poor
B	Poor
C	Medium
D	Rich
E	Very Rich

#### 48. Ecology Check:

- Check the ecology from the data collected to determine if the ecological classification is correct.
- Where collected/applicability: Treatment plot centre soil pit.

Example: Yes (Can make notes in the comments section).



#### **49. Coarse Fragments:**

- Record the total percentage of coarse fragment content (particles greater than 2.0 mm) of the entire soil profile. Gravel + cobbles + stones = total coarse fragment.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 22%

Precision: +/- 5%

#### **50. Depth to Gley:**

- Record the depth from the top of the "A" horizon to evidence of gleying.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 15 cm

Precision: +/- 5 cm

#### **51. Depth to Mottling:**

- Record the depth from the top of the "A" horizon to evidence of mottles.
- Where collected/applicability: Treatment plot centre soil pit.

Example: 15 cm

Precision: +/- 5 cm

#### **8.1.12 Site Index**

Ideally, site index is completed pre-harvest, on each treatment plot centre (or installation centre if typical installation). Since this is not applicable in most instances, site index will be collected in adjacent parent stands having the same soil moisture, nutrient regime, and physiographic site characteristics as the associated treatment plot. Three 300 m<sup>2</sup> Site Index plots in the adjacent parent stand will be done for each installation (or for each treatment plot should the treatment plots have different parent stands in instances of split installations).

Plot radius is 9.77 m. Measure total height, and breast height age & diameter of each of the three largest DBH *Lodgepole Pine* trees in the plot.

#### **Counted Tree Age:**

- taken at breast height (1.3 m). The core should deviate no more than 1 cm from the pith.
- precision +/- 1 year

#### **Total Height:**

- precision +/- 5%

Diameter:

- taken at breast height (1.3 m) on the high side of the tree
- Precision +/- 0.1 cm

The three largest DBH trees will:

- have no damage affecting height growth;
- not have been suppressed (check cores for evidence of past suppression);
- be standing and live with good vigour
- be dominant or codominant
- be accurately measurable for breast height age
- not be a veteran or “wolf” tree (bull pine)

**52. Site Index Method:**

- Record whether the site index measurements were done pre or post harvest.
- Where collected/applicability: Treatment plot.(Can be same 3 SI plots for all four treatment plots if applicable).

Example: POST

Site Index Method	Description
POST	Post harvest SI assessment in adjacent, parent stand
PRE	Pre harvest SI assessment in treatment plot

**53. Plot Size (m<sup>2</sup>):**

- Record the site index plot size. This field is to accommodate site index plots which were done pre-methodology. The default plot size is 300 m<sup>2</sup>.
- Where collected/applicability: Treatment plot.(Can be same SI plots for all four treatment plots if applicable).

Example: Record the size of the circular site index plot in square metres.

**54. Site Index Tie Point Description, Azimuth, Distance & UTM coordinates:**

- Enter a description of tie point location (collect a GPS point here as well). Record the azimuth and distance in Metres from the S.I. Tie Point TO the Site Index Plot centre. Collect the UTM coordinates of the tie point using a gps. (UTM Nad 83 Zone 11, Alberta/BC).
- Where collected/applicability: Pre-Harvest, Treatment plot centre or Adjacent Parent Stand.

Example: S.I.#1 located 250 m @ 56° from SE block corner sign (GPS'd @ UTM N:5897643 E:675653).

### 8.1.13 Tree & Competition Measurements

This section deals with measurements taken at the 16 "regeneration" plots within each Treatment plot. Consistency when taking measurements and assessing percent covers is essential to the integrity of the trial.

"Crop tree" for this trial is defined as the coniferous tree with the best overall height, root-collar diameter and health within each plot. Initially, on planted installations, the crop tree should be a planted pine; However, as per section 7.2 (pg 18), if a naturally regenerated conifer in a regeneration plot exceeds the height, diameter, and health of an existing crop tree then that natural is to be tagged, numbered and considered to be the new crop tree. Moreover, any *planted* Pine in a regeneration plot, which exceeds the height, diameter, and health of an existing crop tree will also replace the existing crop tree (It will be tagged and numbered already so just record that number as the new crop tree). Crop trees will continue to be replaced by better candidates throughout the life of the plots, often more than once.

Competition is to be assessed using the "crop tree" as theoretical plot centre. If no crop tree exists within a particular regeneration plot then competition is to be assessed using regeneration plot centre. This holds true for "control" plots, i.e.: competition must still be assessed regardless of the presence (or absence) of a crop tree.

Size and growth measurements are to be taken on 50 tagged trees per measurement plot. Start by using tagged trees *within* the regen plot. On lower density sites if you get through picking/measuring your trees from the regeneration plots and don't have the required 50 trees, go back to the first plot and select the closest pine *outside* the regen plot, go to the next plot and do the same, continue through this until you've achieved the required 50. If only a few extra trees are needed, this may result in "groups" of trees; However, it is still a simple unbiased selection method.

#### **55. Quad # (Treatment Plot#):**

- Record the quadrant number that the regeneration is in (1-4).
- Where collected/applicability: Regeneration plot.

Example: ~~1~~

#### **56. Regeneration Plot Number:**

- Record the regeneration plot number (1-16).
- Where collected/applicability: Regeneration plot.

Example: 14

#### **57. Coniferous Density:**

- Record the number of live coniferous trees >5.0 cm in height by species & origin in a 1.78 metre radius plot around each regeneration plot centre.
- Where collected/applicability: Regeneration plot (centre).

Example:     Pine   Planted       14 stems  
               Spruce Natural     8 stems  
               Pine   Natural       3 stems

**58. Tree Number:**

- Record the tree number from the tree tag (tags are never to be moved from one tree to another for replacement or otherwise. E.g.; If a tagged tree has died and you have an ingress that you need to tag, don't take the dead trees tag. Use a new tag and assign a new tree number.
- Where collected/applicability: Measurement plot (**All** trees initially planted in the measurement plot will be numbered).

Example: 45

**59. Crop Tree Designation:**

- Record whether or not (Yes/No) each tree is the suitable crop tree selected for that plot. This will show us whether or not each plot contains a crop tree and will equate to coniferous stocking.
- Where collected/applicability: Regeneration plot.

Example: Yes

**60. Tree Species Code:**

- Record the tree species code of the tree you are measuring.
- Where collected/applicability: Regeneration plot (50 sample “crop” trees – may be outside regen plot).

Example: P1

Code	Species
Fa	Sub-alpine Fir
Fb	Balsam Fir
Lt	Tamarack (Larch)
Pj	Jack pine
P1	Lodgepole Pine
Sb	Black Spruce
Se	Englemann Spruce
Sw	White Spruce

**61. Tree Source:**

- Record whether the tree you are measuring is planted *or* from natural regeneration.
- Where collected/applicability: Regeneration plot (50 sample “crop” trees – may be outside regen plot).

Example: Planted

## 62. Seedling Position Code:

- Record the position where the tree is situated. The codes apply to mechanical site preparation (mounding in particular). By assessing seedling position, we can draw some broad conclusions with regards to tree mortality/vigor vs. seedling position. Albeit difficult, use the closest match from the codes on non-mound type site prep areas.
- Where collected/applicability: Regeneration plot (50 sample "crop" trees – may be outside regen plot). Only done once per tree during life of plot.

Example: H

Code	Seedling Position
AH	Above hinge, below crest
B	Base of trench or patch
BH	Below hinge, above base of trench or patch
C	Crest of berm or mound
H	Hinge
U	Undisturbed ground

## 63. Rooting Media Code:

- Record the trees rooting media code.
- Where collected/applicability: Regeneration plot (50 sample "crop" trees – may be outside regen plot). Only done once per tree during life of plot.

Example: H

Code	Rooting Media Description
B	Blended (anything <75% humus,mineral,organic, including mech site prep mixed soils)
F	Fire influenced soil
H	Mainly humus (>75%)
M	Mainly mineral soil (>75%)
O	Mainly organic (>75%)
R	Rotting wood

## 64. Tree Height:

- Record the tree height from tree stem ground level to the base of the bud. Leaning trees are to be measured from the base of the bud plumb to the ground level. E.g.; If a tree had an extreme lean of about 45° you would measure from the base of the terminal bud straight down to the ground, in other words, you do not measure the *length* of the tree, only the *height* above ground level.
- Where collected/applicability: Regeneration plot (50 sample "crop" trees – may be outside regen plot).

Example: 32.6 cm

Precision: Record to mm accuracy on trees < 2 m tall, trees over 2 m are recorded to cm accuracy. Checked to +/- 1 cm for trees < 3 m, +/- 10 cm for trees > 3 m.

### **65. Ground Line Diameter:**

- Record stem diameter in cm at ground level. Be careful not to damage trees with the calipers when taking measurements. Trees will be measured at ground line until the tree is 2.0 m tall, after which diameter will be taken at breast height.
- Where collected/applicability: Regeneration plot (50 sample “crop” trees – may be outside regen plot).

Example: 0.4 cm

Precision: +/- 1 mm

### **66. Crown Diameter:**

- Record the crown diameter in cm at the widest point.
- Where collected/applicability: Regeneration plot (50 sample “crop” trees – may be outside regen plot).

Example: 8 cm

Precision: +/- 1 cm for trees < 3 m, +/- 10 cm for trees > 3 m.

### **67. Crown Length:**

- Record the crown length in cm. Start at the bottom where the live crown starts and measure up to the tip of the terminal bud.
- Where collected/applicability: Regeneration plot (50 sample “crop” trees – may be outside regen plot).

Example: 18 cm

Precision: +/- 1 cm for trees < 3 m, +/- 10 cm for trees > 3 m.

### **68. Vigor:**

Assign each tree one of the four following vigor codes:

- AL - Alive and likely to survive
- AU - Alive but unlikely to survive
- D - Dead
- M – Missing (after being recorded as missing for three years, can assign as Dead)
- Each tree assigned an “AU” or “D” should have at least one applicable health code backing up the vigor call.
- Where collected/applicability: ALL tagged trees within the measurement plot will be assessed.

Example: AL

**69. Health Code:**

- Record up to two health codes from the acceptable list of codes, if applicable.
- Where collected/applicability: ALL tagged trees within the measurement plot will be assessed.

Example: AE

Code	Description	Code	Description	Code	Description
A	Abiotic injuries	IBA	Ambrosia Beetles	WBC	Cows or Horses
AB	Fire	IBD	Douglas Fir Beetle	WBH	Hare or Rabbit
AC	Chemical Pollutants (not pesticides)	IBE	Eastern Larch Beetle	WBU	Ungulates (Deer, Elk, Moose)
AD	Drought	IBH	Ash Bark Beetles	WM	Mice or Voles
AE	Winter Damage	IBL	Lodgepole Pine Beetle	WP	Porcupine
AES	Snow or Ice	IBM	Mountain Pine Beetle	WS	Squirrel
AEW	Winter Desiccation	IBR	Spruce Beetle	WV	Beaver
AF	Frost	IC	Defoliators – Coniferous	WY	Sapsuckers
AFC	Frost Crack	ICA	Needle Miners General		
AFH	Frost Heaved	ICB	Budworms General		
AFK	Shoot/Bud Frost Damage	ICC	Spruce Budworm		
AH	Hail	ICG	Black Army Cutworm		
AL	Lightening	ICN	Sawflies General		
AO	Flooding	ICP	Yellowheaded Spruce Sawfly		
AR	Redbelt	ICZ	Budmoths general		
AS	Slide	ID	Defoliators – Deciduous		
AW	Windthrow	IDA	Aspen Leaf Beetle		
AWS	Soil Failure	IDB	Birch Skelotonizer		
AWT	Treatment or Harvesting Related	IDC	Cankerworms General		
AX	Scarring/Rubbing	IDF	Leafminers General		
D	Disease	IDG	Grey Willow Leaf Beetle		

Code	Description	Code	Description	Code	Description
DB	Broom Rusts	IDL	Large Aspen Tortrix		
DBC	Yellow Witches Broom of Spruce	IDM	Forest Tent Caterpillar		
DBM	Witches Broom Rust of Fir	IDO	Bruce Spanworm		
DC	Spruce Cone Rust	IDP	Aspen Leafroller		
DD	Stem Decays	IDS	Satin Moth		
DDA	Aspen/Poplar Decays and Stains	IE	Engravers/IPS		
DDP	Red Ring Rot	IF	Spruce Bud Midge		
DE	Seedling Diseases	IM	Seed and Cone Insects		
DED	Damping Off Disease	IMC	Spruce Seed Moth		
DEG	Grey Mold	IMD	Coneworms		
DEM	Powdery Mildew	IME	Eastern Pine Seedworm		
DES	Storage Mold	IMK	Cone Midges		
DF	Needle Diseases	IMM	Spruce Seed Chalid/Midge		
DFB	Needle Cast General	IMP	European Fruit Lecanium		
DFD	Elytroderma Needle Cast	IMS	Cone Maggots		
DFE	Needle Rusts General	IP	Pitch Blister Moths		
DL	Leaf Diseases	IR	Wood Borers		
DLR	Leaf Rusts General	IRA	Carpenter Ant		
DLS	Leaf Spot Diseases	IRB	Poplar Borer		
DLV	Aspen and Poplar Leaf and Twig Blight	IRC	Poplar and Willow Borer		
DM	Lodgepole Pine Dwarf Mistletoe	IRF	Flathead Borers		
DR	Root Diseases	IRM	Clearwing Moth		
DRA	Armillaria Root Disease	IRT	Spruce Borers		
DRI	Tomentosus Root Rot	IRW	White Spotted Sawyer Beetle		
DS	Stem Diseases	IRY	Northeastern Sawyer Beetle		
DSA	Atropellis Canker	IS	Seedling Insects		
DSB	White Pine Blister	ISO	Strawberry Root		



Code	Description	Code	Description	Code	Description
	Rust		Weevil		
DSC	Comandra Blister Rust	IST	Crane Flies		
DSD	Sphaeropsis (Diplodia) Blight	IT	Terminal Weevils		
DSF	Sweet Fern Blister Rust	ITS	White Pine Weevil		
DSG	Scleroderris Canker	ITT	Lodgepole Terminal Weevil		
DSH	Hypoxylon Canker	IW	Root Weevils		
DSN	Aspen/Poplar Cankers General	IWA	Northern Pine Weevil		
DSR	Diplodia Gall and Rough Bark	IWP	Couper Collar Weevil		
DSS	Stalactiform Blister Rust	IWS	Yosemite Bark Weevil		
DSW	Western Gall Rust	IWW	Warren Root Collar Weevil		
DT	Burls	T	Treatment Injuries		
I	Insects	TC	Chemical		
IA	Aphids, Adelgids, and Scale Insects	TL	Logging		
IAG	Gall Forming Aphids	TM	Mechanical		
IAO	Open feeding Aphids and Adelgids	TP	Planting		
IAP	Pine Needle Scale	TPJ	J Root		
IB	Bark Beetles	TPM	Poor Planting Microsite		
V	Vegetation Problems	V	Vegetation Problems		
VP	Vegetation Press	VP	Vegetation Press		
W	Wildlife	W	Wildlife		
WA	Bear	WA	Bear		
WB	Browsing Damage	WBC	Cows or Horses		

#### 70. Last Three Internode Lengths:

- Internodal measurements capture one or more previous years measurements when plots are not visited annually. Internodal measurements are also recorded for the previous three years growth on new crop trees that are replacing existing crop trees.
- Where collected/applicability: Regeneration plot (50 sample “crop” trees – may be outside regen plot).

Example: 2001 = 3.4 cm, 2002 = 2.2 cm, 2003 = 3.2 cm.

Precision: Record to mm accuracy on trees < 2 m tall, trees over 2 m are recorded to cm accuracy. Checked to +/- 1 cm for trees < 3 m, +/- 10 cm for trees > 3 m.

### 71. Stem Mapping (Elective):

- Some members have elected to do stem mapping. This is commonly done by selecting a tree number and recording the azimuth and distance (m) from treatment plot centre to the selected tree. Other methods may be used to stem map as long as the data is compatible with the existing database.
- Where collected/applicability: Treatment plot.

Example: Tree # 212 = 3.2 m @ 256° from treatment plot centre.

Precision: +/- 5 cm and within 2°.

### 72. Deciduous Competition:

- For each deciduous species record the # of stems over 30 cm in height in a 2 m radius plot centred on the crop tree (Suckered deciduous stems are to be counted as individuals if the suckering has occurred under ground and is not visible. A “group” of stems visibly suckered and originating above ground may be counted as a single stem.
- In the same plot, record the modal height and modal diameter of each deciduous species. Modal height is the most occurring height in a plot not the average height. On plots with no crop tree, regeneration plot centre is to be used for plot centre in assessing competition.
- In the same 2.0 m plot as above, record the height, species and proximity to crop tree (or regeneration plot centre if applicable) for the tallest deciduous tree over 30 cm height.
- Where collected/applicability: 2.0 m radius plot centred on crop tree or regeneration plot centre if no crop tree is available.

Example: AW = 21 stems, Modal Height = 37.5 cm Modal Diameter = 0.9 cm

PB = 28 stems, Modal Height = 47.7 cm Modal Diameter = 1.1 cm

Tallest Deciduous: Species: Aw Height: 75.0 cm, Proximity: 25 cm

Precision: Mod. Ht: +/- 2 cm on trees < 1 m tall, Auditors' discretion on trees > 1 m tall Mod. Diam.: +/- 0.1 cm.

Ht. of tallest decid: +/- 1 cm for trees < 3 m, +/- 10 cm for trees > 3 m. Proximity: +/- 1 cm

### 73. Shrub & Herb Competition:

- For up to five herb and shrub species competing with the crop tree, record the percent cover for each species along with the modal height of each in a 1.0 m radius plot centred on the crop tree (assessment is done on plot centre when no crop tree is present). It is the assessor's decision as to whether or not a given species is competing with the crop tree and is based on the volume of vegetation and its proximity to the crop tree within the 1 m cylinder. Don't try to fill all five species if they aren't actually competing with the crop tree.

In the same 1.0 m plot as above, record the height, species and proximity to crop tree (or regeneration plot centre if applicable) for the tallest deciduous tree over 30 cm height.

- Where collected/applicability: 1.0 m radius plot centred on crop tree or regeneration plot centre if no crop tree is available.

Example: AW = 21 stems, Modal Height = 37.5 cm Modal Diameter = 0.9 cm

PB = 28 stems, Modal Height = 47.7 cm Modal Diameter = 1.1 cm

Tallest Deciduous: Species: Aw Height: 75.0 cm, Proximity: 25 cm

Precision: Mod. Ht: +/- 2 cm on trees < 1 m tall, Auditors' discretion on trees > 1 m tall Mod. Diam.: +/- 0.1 cm.

Ht. of tallest decid: +/- 1 cm for trees < 3 m, +/- 10 cm for trees > 3 m. Proximity: +/- 1 cm

#### **74. Dropped Cone Survey/Slash Rating:**

- In the same 1.0 m radius plot in which shrub and herb competition was assessed, count the number of pine cones present on the surface of the plot and also record the percent cover of slash (use the same percent cover assessment procedure used for herb and shrub competition).

Example: Plot #15: 21 cones, slash rating = 32%

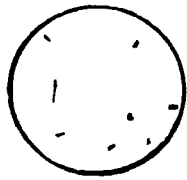
#### **9. Quality Control/Auditing**

Audits will initially be done in the form of "mentoring audits" with the objective of helping the contractors to attain consistency and ensuring that all necessary measurements are completed. Contractors are encouraged to assist the Field Coordinator with the audits to get the most out of the "mentoring" process. Technical committee members are also encouraged to attend audits although obviously this is not always possible due to timing constraints. *A more detailed audit/quality control methodology will be developed prior to the next version of the manual.*

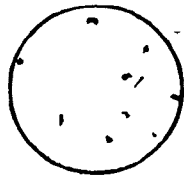


## APPENDIX I

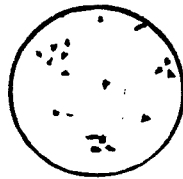
### Comparison Chart for Visual Estimation of Percent Cover



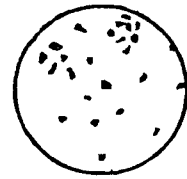
1%



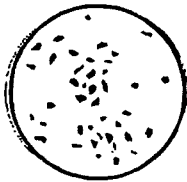
2%



3%



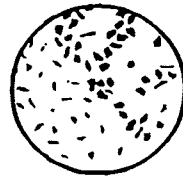
5%



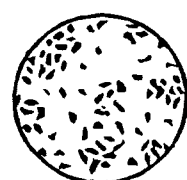
7%



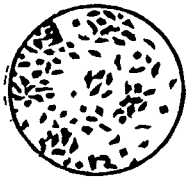
10%



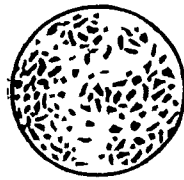
15%



20%



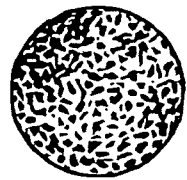
25%



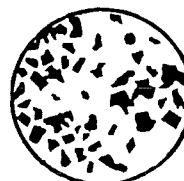
30%



40%

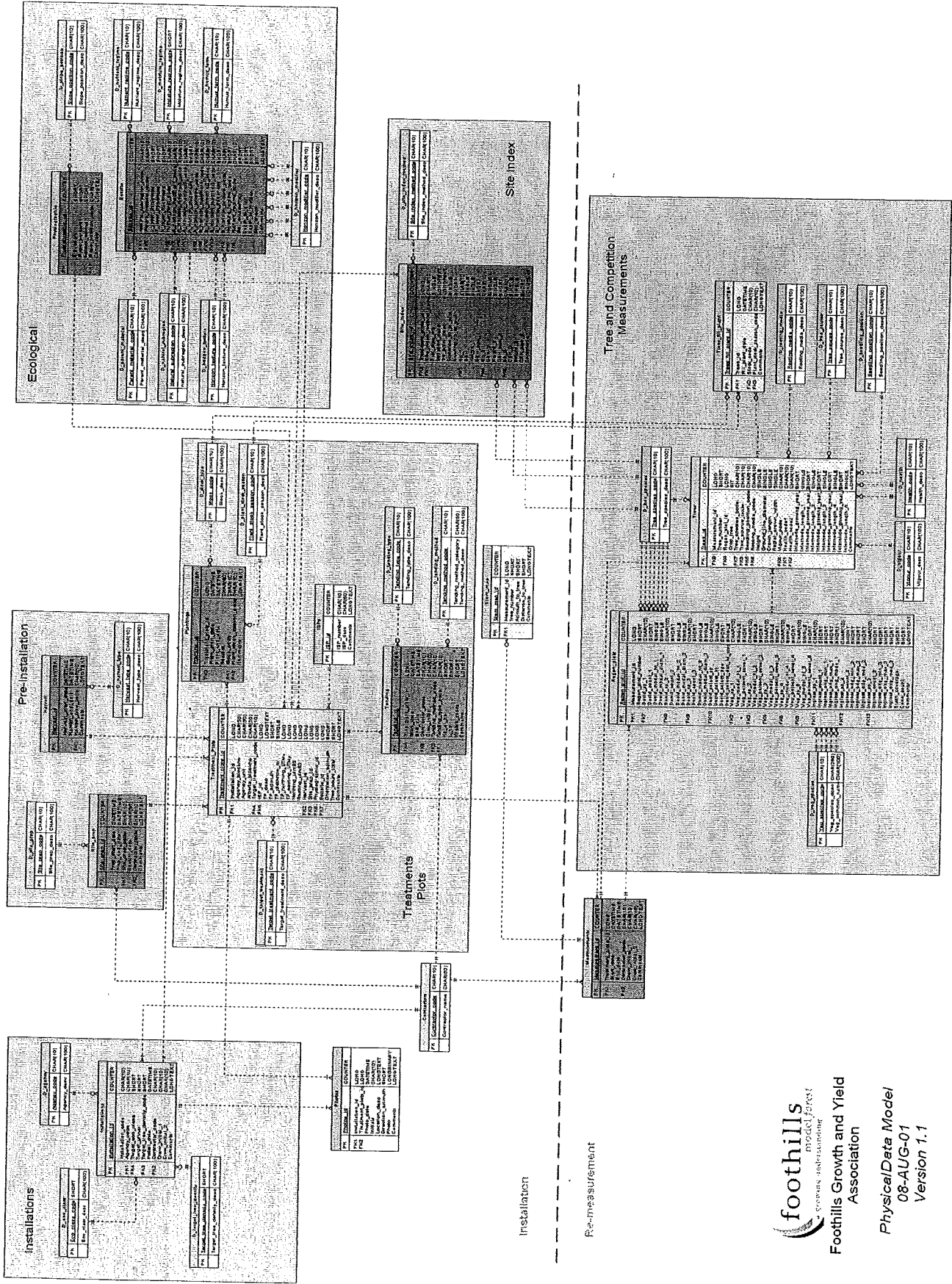


50%



**APPENDIX II**

**Foothills Growth and Yield Association Data Model ER Diagram**





## APPENDIX III

### ASCII Sample File

Below is a sample file illustrating how the ASCII files must be structured for delivery to the FMF from the contractors. The sample pertains to a portion of the 'installation' level file.

```
"Agency_code","Target_eco_class","Target_group","Target_tree_density_code","Install_date","Contractor_code" ...  
"ANC    ",1,1,816,7/10/01,"MCH    ",...  
"BRL    ",2,4,1111,21/10/01,"MCH    ",...
```

Note the date fields should be masked as dd/mm/yy OR dd-mon-yy.

**APPENDIX IV**

**Summary Delivery File Structure Description**

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb Thursday, August 09, 2001  
 Query: FileStructure\_L01\_Installation

<u>Columns</u>	Type	Size
Name	Text	10
Agency_code	Number (Integer)	2
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	8
Install_date	Date/Time	10
Contractor_code	Text	10
Crew_initial_1	Text	10
Crew_initial_2	Text	10
Comments	Memo	N/A

Thursday, August 09, 2001

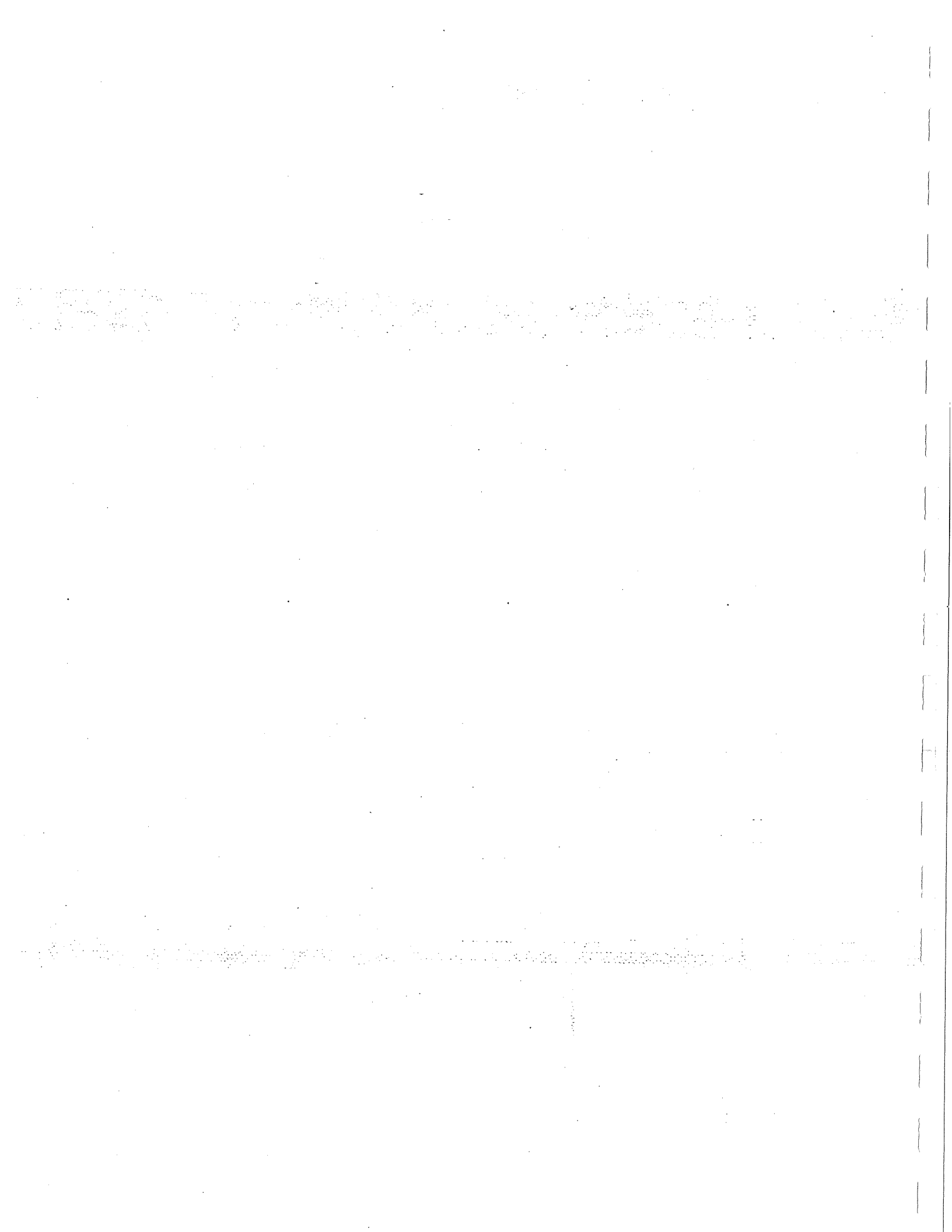
R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
 Query: FileStructure\_L02\_TreatmentPlot

<u>Columns</u>	Type	Size
Name	Text	10
Agency_code	Number (Integer)	2
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	10
Target_treatment_code	Text	10
ISP_number	Text	N/A
ISPs.Comments	Memo	N/A
TP_desc	Memo	2
TP_azimuth	Number (Integer)	4
TP_distance_m	Number (Single)	4
TP_northing_UTMx	Number (Long)	4
TP_easting_UTMy	Number (Long)	4
Northing_utm83	Number (Long)	4
Easting_utm83	Number (Long)	4
Orientation_azimuth	Number (Integer)	2
Tree_count_total	Number (Integer)	2
Treatment_Plots.Comments	Memo	N/A

Thursday, August 09, 2001

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
 Query: FileStructure\_L03\_Ecological

<u>Columns</u>	Type	Size
Name	Text	10
Agency_code	Number (Integer)	2
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Elevation	Number (Integer)	2
Slope_percent	Number (Integer)	2
Aspect_azimuth	Number (Integer)	10
Slope_position_code	Text	N/A
Physiographic.Comments	Memo	10
Natural_subregion_code	Text	10
Parent_material_code	Text	2
L_layer_thickness	Number (Integer)	2
F_layer_thickness	Number (Integer)	2
H_layer_thickness	Number (Integer)	2



**Columns**

Name	Type	Size
Agency_code	Text	10
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Site_index_method_code	Text	10
Plot_size_m2	Number (Single)	4
Location_desc	Memo	N/A
Tie_point_desc	Memo	N/A
Distance_to_si_plot	Number (Single)	4
Bearing_to_si_plot	Number (Integer)	2
Sp_1	Text	10
DBH_1	Number (Single)	4
Height_1	Number (Single)	4
DBH_age_1	Number (Integer)	2
Sp_2	Text	10
DBH_2	Number (Single)	4
Height_2	Number (Single)	4
DBH_age_2	Number (Integer)	2
Sp_3	Text	10
DBH_3	Number (Single)	4
Height_3	Number (Single)	4
DBH_age_3	Number (Integer)	2
Comments	Memo	N/A

**Columns**

Name	Type	Size
Agency_code	Text	10
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Start_date	Date/Time	8
End_date	Date/Time	8
Contractor_code	Text	10
Crew_initial_1	Text	10
Crew_initial_2	Text	10
Regen_plot_number	Number (Integer)	2
Decid_sp_1	Text	10
Decid_count_1	Number (Integer)	2
Decid_modal_ht_1	Number (Single)	4
Decid_modal_diam_1	Number (Single)	4
Decid_sp_2	Text	10
Decid_count_2	Number (Integer)	2
Decid_modal_ht_2	Number (Single)	4
Decid_modal_diam_2	Number (Single)	4
Decid_sp_3	Text	10
Decid_count_3	Number (Integer)	2
Decid_modal_ht_3	Number (Single)	4
Decid_modal_diam_3	Number (Single)	4
Decid_select_sp	Text	10

Decid_select_ht	Number (Single)	4
Decid_select_age	Number (Integer)	2
Decid_select_dist_to_crop	Number (Single)	4
Veg_sp_1	Text	10
Veg_modal_ht_1	Number (Single)	4
Veg_percent_cover_1	Number (Integer)	2
Veg_sp_2	Text	10
Veg_modal_ht_2	Number (Single)	4
Veg_percent_cover_2	Number (Integer)	2
Veg_sp_3	Text	10
Veg_modal_ht_3	Number (Single)	4
Veg_percent_cover_3	Number (Integer)	2
Veg_sp_4	Text	10
Veg_modal_ht_4	Number (Single)	4
Veg_percent_cover_4	Number (Integer)	2
Veg_sp_5	Text	10
Veg_modal_ht_5	Number (Single)	4
Veg_percent_cover_5	Number (Integer)	2
Ingress_sp_1	Text	10
Ingress_count_1	Number (Integer)	2
Ingress_orig_min_1	Number (Integer)	2
Ingress_orig_max_1	Number (Integer)	2
Ingress_orig_mode_1	Number (Integer)	2
Ingress_sp_2	Text	10
Ingress_count_2	Number (Integer)	2
Ingress_orig_min_2	Number (Integer)	2
Ingress_orig_max_2	Number (Integer)	2
Ingress_orig_mod_2	Number (Integer)	2
Ingress_sp_3	Text	10
Ingress_count_3	Number (Integer)	2
Ingress_orig_min_3	Number (Integer)	2
Ingress_orig_max_3	Number (Integer)	2
Ingress_orig_mod_3	Number (Integer)	2
Slash_coverage	Number (Integer)	2
Cone_count	Number (Integer)	2
Comments	Memo	N/A

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
 Query: FileStructure\_L08\_Trees

Thursday, August 09, 2001

**Columns**

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Agency_code	Text	10
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Start_date	Date/Time	8
End_date	Date/Time	8
Contractor_code	Text	10
Crew_initial_1	Text	10
Crew_initial_2	Text	10
Tree_number	Number (Integer)	2
Regen_plot_number	Number (Integer)	2
Crop_tree	Yes/No	1
Tree_species_code	Text	10
Tree_source_code	Text	10
Seedling_position_code	Text	10
Rooting_media_code	Text	10
Height	Number (Single)	4

Ground_line_diameter	Number (Single)	4
Crown_length	Number (Single)	4
Radial_crown_width	Number (Single)	4
Vigour_code	Text	10
Health_code1	Text	10
Health_code2	Text	10
Internode_growing_year_1	Number (Integer)	2
Internode_length_1	Number (Single)	4
Internode_growing_year_2	Number (Integer)	2
Internode_length_2	Number (Single)	4
Internode_growing_year_3	Number (Integer)	2
Internode_length_3	Number (Single)	4
Internode_growing_year_4	Number (Integer)	2
Internode_length_4	Number (Single)	4
Internode_growing_year_5	Number (Integer)	2
Internode_length_5	Number (Single)	4
Comments	Memo	N/A

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
Query: FileStructure\_L09\_StemMapping

Thursday, August 09, 2001

**Columns**

Name	Type	Size
Agency_code	Text	10
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Start_date	Date/Time	8
End_date	Date/Time	8
Contractor_code	Text	10
Crew_initial_1	Text	10
Crew_initial_2	Text	10
Tree_number	Number (Integer)	2
Azimuth_to_tree	Number (Integer)	2
Distance_to_tree	Number (Integer)	2
Comments	Memo	N/A

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
Query: FileStructure\_L10\_Tending

Thursday, August 09, 2001

**Columns**

Name	Type	Size
Agency_code	Text	10
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Start_date	Date/Time	8
End_date	Date/Time	8
Contractor_code	Text	10
Crew_initial	Text	10
Tending_method_code	Text	10
Tending_type_code	Text	10
Kg_ai_ha	Number (Integer)	2
L_ha	Number (Integer)	2
Knotch_space	Number (Integer)	2
Comments	Memo	N/A

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
Query: FileStructure\_L11\_Photos

Thursday, August 09, 2001

**Columns**

<b>Name</b>	<b>Type</b>	<b>Size</b>
Agency_code	Text	10
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Photo_date	Date/Time	8
Initials	Text	10
Location_desc	Memo	N/A
Direction_azimuth	Number (Integer)	2
Photo	OLE Object	N/A
Comments	Memo	N/A

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
Query: FileStructure\_L12\_Trees\_FillPlant

Thursday, August 09, 2001

**Columns**

<b>Name</b>	<b>Type</b>	<b>Size</b>
Agency_code	Text	10
Target_eco_class	Number (Integer)	2
Target_group	Number (Integer)	2
Target_tree_density_code	Number (Integer)	2
Target_treatment_code	Text	10
Tree_number	Number (Integer)	2
Regen_plot_number	Number (Integer)	2
Fill_plant_date	Date/Time	8
Stock_code	Text	10
Plant_stock_season_code	Text	10
Comments	Memo	N/A



## **APPENDIX V**

### **Detailed Delivery File Structure Description**

**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
ColumnHidden:	False	
ColumnWidth:	2364	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	
Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
ColumnHidden:	False	
ColumnWidth:	1788	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
ColumnHidden:	False	
ColumnWidth:	2172	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Install_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
Description:	Start date of installation layout	
Ordinal Position:	4	
Required:	True	
Source Field:	Install_date	
Source Table:	Installations	
Validation Rule:	( between 01-jan-00 and 01-jan-02 )	

Contractor_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
Description:	Code for contractor performing installation installation	
Ordinal Position:	5	
Required:	True	
Source Field:	Contractor_code	
Source Table:	Installations	
Crew_initial_1	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
Description:	Crew initials 1	
Ordinal Position:	6	
Required:	True	
Source Field:	Crew_initial_1	
Source Table:	Installations	
Crew_initial_2	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updatable	
Collating Order:	General	
Description:	Crew initials 2	
Ordinal Position:	7	
Required:	False	
Source Field:	Crew_initial_2	
Source Table:	Installations	
Comments	Memo	N/A
AllowZeroLength:	False	
Attributes:	Variable Length, Updatable	
Collating Order:	General	
Description:	Installation comments	
Ordinal Position:	8	
Required:	False	
Source Field:	Comments	
Source Table:	Installations	

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
 Query: FileStructure\_L02\_TreatmentPlot

Thursday, August 09, 2001

**Columns**

<b>Name</b>	<b>Type</b>	<b>Size</b>
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
ColumnHidden:	False	
ColumnWidth:	2532	
Description:	Target numeric ecological class as defined by FGYA (1-5)	

Ordinal Position:	1		
Required:	True		
Source Field:	Target_eco_class		
Source Table:	Installations		
Target_group		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
ColumnHidden:	False		
ColumnWidth:	1968		
Description:	Target geographic group as defined by FGYA (1-3)		
Ordinal Position:	2		
Required:	True		
Source Field:	Target_group		
Source Table:	Installations		
Validation Rule:	(>0 And <=3)		
Target_tree_density_code		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
ColumnHidden:	False		
ColumnWidth:	2820		
Description:	Target tree density for the given installation		
Ordinal Position:	3		
Required:	True		
Source Field:	Target_tree_density_code		
Source Table:	Installations		
Target_treatment_code		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
ColumnHidden:	False		
ColumnWidth:	2400		
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin		
Ordinal Position:	4		
Required:	True		
Source Field:	Target_treatment_code		
Source Table:	Treatment_Plots		
ISP_number		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	ISP identifier		
Ordinal Position:	5		
Required:	True		
Source Field:	ISP_number		
Source Table:	ISPs		
ISPs.Comments		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	ISP Comments		
Ordinal Position:	6		
Required:	False		
Source Field:	Comments		
Source Table:	ISPs		

TP_desc		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Tie point description for treatment plot location		
Ordinal Position:	7		
Required:	True		
Source Field:	TP_desc		
Source Table:	Treatment_Plots		
TP_azimuth		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Bearing FROM tie point to Treatment Plot Centre		
Ordinal Position:	8		
Required:	True		
Source Field:	TP_azimuth		
Source Table:	Treatment_Plots		
Validation Rule:	(>1 And <= 360)		
TP_distance_m		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Distance FROM tie point to Treatment Plot Centre		
Ordinal Position:	9		
Required:	True		
Source Field:	TP_distance_m		
Source Table:	Treatment_Plots		
TP_northing_UTMx		Number (Long)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tie point northing from GPS		
Ordinal Position:	10		
Required:	True		
Source Field:	TP_northing_UTMx		
Source Table:	Treatment_Plots		
Validation Rule:	(>5500000 And <= 6200000)		
TP_easting_UTMy		Number (Long)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tie point easting from GPS		
Ordinal Position:	11		
Required:	True		
Source Field:	TP_easting_UTMy		
Source Table:	Treatment_Plots		
Validation Rule:	(>300000 And <=750000)		
Northing_utm83		Number (Long)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	UTM northing for treatment plot centre		
Ordinal Position:	12		
Required:	True		
Source Field:	Northing_utm83		
Source Table:	Treatment_Plots		
Validation Rule:	(>5500000 And <=6200000)		

Easting_utm83	Number (Long)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	UTM easting for treatment plot centre	
Ordinal Position:	13	
Required:	True	
Source Field:	Easting_utm83	
Source Table:	Treatment_Plots	
Validation Rule:	(>300000 And <=750000)	
Orientation_azimuth	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Orientation of the square treatment plot along the eastern most boundary	
Ordinal Position:	14	
Required:	True	
Source Field:	Orientation_azimuth	
Source Table:	Treatment_Plots	
Validation Rule:	(>0 And <=360)	
Tree_count_total	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Total number of planted trees within the treatment plot. This will include the areas outside the measurement plot (red plot).	
Ordinal Position:	15	
Required:	True	
Source Field:	Tree_count_total	
Source Table:	Treatment_Plots	
Validation Rule:	( between 0 and 5000 )	
Treatment_Plots.Comments	Memo	N/A
AllowZeroLength:	False	
Attributes:	Variable Length, Updateable	
Collating Order:	General	
Description:	Treatment plot comments	
Ordinal Position:	16	
Required:	False	
Source Field:	Comments	
Source Table:	Treatment_Plots	

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
 Query: FileStructure\_L03\_Ecological

Thursday, August 09, 2001

**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	

Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	
Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	
Ordinal Position:	4	
Required:	True	
Source Field:	Target_treatment_code	
Source Table:	Treatment_Plots	
Elevation	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Elevation at treatment plot centre	
Ordinal Position:	5	
Required:	True	
Source Field:	Elevation	
Source Table:	Physiographic	
Validation Rule:	(> 500 And <=3000)	
Slope_percent	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Average slope percent over treatment plot	
Ordinal Position:	6	
Required:	True	
Source Field:	Slope_percent	
Source Table:	Physiographic	
Validation Rule:	(>=0 And <= 150)	

Aspect_azimuth	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Average aspect azimuth for the treatment plot	
Ordinal Position:	7	
Required:	True	
Source Field:	Aspect_azimuth	
Source Table:	Physiographic	
Validation Rule:	(>0 And <=360)	
Slope_position_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Slope position of the treatment plot	
Ordinal Position:	8	
Required:	True	
Source Field:	Slope_position_code	
Source Table:	Physiographic	
Physiographic.Comments	Memo	N/A
AllowZeroLength:	False	
Attributes:	Variable Length, Updateable	
Collating Order:	General	
Description:	Physiography comments	
Ordinal Position:	9	
Required:	False	
Source Field:	Comments	
Source Table:	Physiographic	
Natural_subregion_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Natural subregion code	
Ordinal Position:	10	
Required:	True	
Source Field:	Natural_subregion_code	
Source Table:	Ecosite	
Parent_material_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Parent material code	
Ordinal Position:	11	
Required:	True	
Source Field:	Parent_material_code	
Source Table:	Ecosite	
L_layer_thickness	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Litter layer average thickness in centimeters	
Ordinal Position:	12	
Required:	True	
Source Field:	L_layer_thickness	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <= 200)	



F_layer_thickness	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Fermented layer average thickness in centimeters	
Ordinal Position:	13	
Required:	True	
Source Field:	F_layer_thickness	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <= 200)	
H_layer_thickness	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Humus layer average thickness in centimeters	
Ordinal Position:	14	
Required:	True	
Source Field:	H_layer_thickness	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <= 200)	
Humus_form_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Humus form code	
Ordinal Position:	15	
Required:	True	
Source Field:	Humus_form_code	
Source Table:	Ecosite	
A_horizon_modifier1_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	A horizon modifier code	
Ordinal Position:	16	
Required:	True	
Source Field:	A_horizon_modifier1_code	
Source Table:	Ecosite	
A_Horizon_modifier2_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	A_Horizon_modifier2_code is of Ecosite	
Ordinal Position:	17	
Required:	False	
Source Field:	A_Horizon_modifier2_code	
Source Table:	Ecosite	
A_Horizon_modifier3_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	A_Horizon_modifier3_code is of Ecosite	
Ordinal Position:	18	
Required:	False	
Source Field:	A_Horizon_modifier3_code	
Source Table:	Ecosite	

A_horizon_thickness	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	A horizon thickness in centimeters as average depth from LFH to B horizon	
Ordinal Position:	19	
Required:	True	
Source Field:	A_horizon_thickness	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <= 200)	
A_horizon_texture_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	A horizon soil texture code	
Ordinal Position:	20	
Required:	True	
Source Field:	A_horizon_texture_code	
Source Table:	Ecosite	
B_horizon_modifier1_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	B horizon modifier code	
Ordinal Position:	21	
Required:	True	
Source Field:	B_horizon_modifier1_code	
Source Table:	Ecosite	
B_Horizon_modifier2_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	B_Horizon_modifier2_code is of Ecosite	
Ordinal Position:	22	
Required:	False	
Source Field:	B_Horizon_modifier2_code	
Source Table:	Ecosite	
B_Horizon_modifier3_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	B_Horizon_modifier3_code is of Ecosite	
Ordinal Position:	23	
Required:	False	
Source Field:	B_Horizon_modifier3_code	
Source Table:	Ecosite	
B_horizon_thickness	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	B horizon depth in centimeters as average depth from bottom of A to bottom of B horizons	
Ordinal Position:	24	
Required:	True	
Source Field:	B_horizon_thickness	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <= 200)	

B_horizon_texture_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	B horizon soil texture	
Ordinal Position:	25	
Required:	True	
Source Field:	B_horizon_texture_code	
Source Table:	Ecosite	
Moisture_regime_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Moisture regime code	
Ordinal Position:	26	
Required:	True	
Source Field:	Moisture_regime_code	
Source Table:	Ecosite	
Nutrient_regime_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Nutrient regime code	
Ordinal Position:	27	
Required:	True	
Source Field:	Nutrient_regime_code	
Source Table:	Ecosite	
Soil_coursefrag	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Average course fragment percentage for entire profile	
Ordinal Position:	28	
Required:	True	
Source Field:	Soil_coursefrag	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <=100)	
Depth_to_gley	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Depth in centimeters to evidence of gleying from top of A horizon	
Ordinal Position:	29	
Required:	False	
Source Field:	Depth_to_gley	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <= 200)	
Depth_to_mottles	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Depth in centimeters to evidence of mottling from top of A horizon	
Ordinal Position:	30	
Required:	False	
Source Field:	Depth_to_mottles	
Source Table:	Ecosite	
Validation Rule:	(>=0 And <= 200)	

Eco_check	Yes/No	1
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Has the treatment plot been confirmed for correct classification?	
Ordinal Position:	31	
Required:	True	
Source Field:	Eco_check	
Source Table:	Ecosite	
Ecosite.Comments	Memo	N/A
AllowZeroLength:	False	
Attributes:	Variable Length, Updateable	
Collating Order:	General	
Description:	Ecology comments	
Ordinal Position:	32	
Required:	False	
Source Field:	Comments	
Source Table:	Ecosite	

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
Query: FileStructure\_L04\_Planting

Thursday, August 09, 2001

**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	
Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target tree density for the given installation	

Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	
Ordinal Position:	4	
Required:	True	
Source Field:	Target_treatment_code	
Source Table:	Treatment_Plots	
Plant_start_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Start date for planting of treatment plot	
Ordinal Position:	5	
Required:	True	
Source Field:	Plant_start_date	
Source Table:	Plantings	
Plant_end_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	End date for planting of treatment plot	
Ordinal Position:	6	
Required:	False	
Source Field:	Plant_end_date	
Source Table:	Plantings	
Seedlot	Text	50
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Seedlot of trees planted in the TP	
Ordinal Position:	7	
Required:	True	
Source Field:	Seedlot	
Source Table:	Plantings	
Stock_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Stock_code identifies D_stock_type	
Ordinal Position:	8	
Required:	True	
Source Field:	Stock_code	
Source Table:	D_stock_type	
Plant_stock_season_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target season for planting stock - spring or summer	
Ordinal Position:	9	
Required:	True	
Source Field:	Plant_stock_season_code	
Source Table:	Plantings	

Comments		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Planting comments		
Ordinal Position:	10		
Required:	False		
Source Field:	Comments		
Source Table:	Plantings		

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 Query: FileStructure\_L05\_BlockInfo

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**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	
Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	

Ordinal Position:	4		
Required:	True		
Source Field:	Target_treatment_code		
Source Table:	Treatment_Plots		
Harvest_start_date		Date/Time	8
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Start date for harvest of treatment plot		
Ordinal Position:	5		
Required:	True		
Source Field:	Harvest_start_date		
Source Table:	Harvest		
Harvest_end_date		Date/Time	8
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	End date for harvest of treatment plot		
Ordinal Position:	6		
Required:	False		
Source Field:	Harvest_end_date		
Source Table:	Harvest		
Harvest_type_code		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Harvest method on the TP		
Ordinal Position:	7		
Required:	False		
Source Field:	Harvest_type_code		
Source Table:	Harvest		
Harvest.Comments		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Harvest comments		
Ordinal Position:	8		
Required:	False		
Source Field:	Comments		
Source Table:	Harvest		
Prep_start_date		Date/Time	8
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Start date for site preparation of treatment plot		
Ordinal Position:	9		
Required:	True		
Source Field:	Prep_start_date		
Source Table:	Site_prep		
Prep_end_date		Date/Time	8
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	End date for site preparation of treatment plot		
Ordinal Position:	10		
Required:	False		
Source Field:	Prep_end_date		
Source Table:	Site_prep		

Site_prep_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for type of site preparation	
Ordinal Position:	11	
Required:	True	
Source Field:	Site_prep_code	
Source Table:	Site_prep	
Density_desc	Text	50
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Generic field to capture prep density where applicable. (e.g. mounds/ha)	
Ordinal Position:	12	
Required:	False	
Source Field:	Density_desc	
Source Table:	Site_prep	
Contractor_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Contractor_code partly identifies Site_prep	
Ordinal Position:	13	
Required:	True	
Source Field:	Contractor_code	
Source Table:	Site_prep	
Site_prep.Comments	Memo	N/A
AllowZeroLength:	False	
Attributes:	Variable Length, Updateable	
Collating Order:	General	
Description:	Site prep comments	
Ordinal Position:	14	
Required:	False	
Source Field:	Comments	
Source Table:	Site_prep	

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 Query: FileStructure\_L06\_SiteIndex

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**Columns**

<b>Name</b>	<b>Type</b>	<b>Size</b>
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	



Required:	True		
Source Field:	Target_eco_class		
Source Table:	Installations		
Target_group		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Target geographic group as defined by FGYA (1-3)		
Ordinal Position:	2		
Required:	True		
Source Field:	Target_group		
Source Table:	Installations		
Validation Rule:	(>0 And <=3)		
Target_tree_density_code		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Target tree density for the given installation		
Ordinal Position:	3		
Required:	True		
Source Field:	Target_tree_density_code		
Source Table:	Installations		
Target_treatment_code		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin		
Ordinal Position:	4		
Required:	True		
Source Field:	Target_treatment_code		
Source Table:	Treatment_Plots		
Site_index_method_code		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Site index determination method code. How the site index was determined. (e.g. PHA on TP, PHA in adjacent etc.)		
Ordinal Position:	5		
Required:	True		
Source Field:	Site_index_method_code		
Source Table:	Site_Index		
Plot_size_m2		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Size of plot in square meters		
Ordinal Position:	6		
Required:	True		
Source Field:	Plot_size_m2		
Source Table:	Site_Index		
Location_desc		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Description of site index plot location		
Ordinal Position:	7		
Required:	True		

Source Field:	Location_desc		
Source Table:	Site_Index		
Tie_point_desc		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Description of reference point for locating site index plot		
Ordinal Position:	8		
Required:	True		
Source Field:	Tie_point_desc		
Source Table:	Site_Index		
Distance_to_si_plot		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Distance from SI tie point desc to SI plot centre		
Ordinal Position:	9		
Required:	True		
Source Field:	Distance_to_si_plot		
Source Table:	Site_Index		
Bearing_to_si_plot		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Bearing from SI tie point desc to SI plot centre		
Ordinal Position:	10		
Required:	True		
Source Field:	Bearing_to_si_plot		
Source Table:	Site_Index		
Sp_1		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree species for tree 1		
Ordinal Position:	11		
Required:	True		
Source Field:	Sp_1		
Source Table:	Site_Index		
DBH_1		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree diameter at breast height in centimeters for tree 1		
Ordinal Position:	12		
Required:	True		
Source Field:	DBH_1		
Source Table:	Site_Index		
Validation Rule:	(>=5 And <= 200)		
Height_1		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree height in meters for tree 1		
Ordinal Position:	13		
Required:	True		
Source Field:	Height_1		
Source Table:	Site_Index		
Validation Rule:	(>=3 And <=50)		

DBH_age_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree age for tree 1		
Ordinal Position:	14		
Required:	True		
Source Field:	DBH_age_1		
Source Table:	Site_Index		
Validation Rule:	(>=10 And <=500)		
Sp_2		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree species for tree 2		
Ordinal Position:	15		
Required:	True		
Source Field:	Sp_2		
Source Table:	Site_Index		
DBH_2		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree diameter at breast height in centimeters for tree 2		
Ordinal Position:	16		
Required:	True		
Source Field:	DBH_2		
Source Table:	Site_Index		
Validation Rule:	(>=5 And <= 200)		
Height_2		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree height in meters for tree 2		
Ordinal Position:	17		
Required:	True		
Source Field:	Height_2		
Source Table:	Site_Index		
Validation Rule:	(>=3 And <=50)		
DBH_age_2		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree age for tree 2		
Ordinal Position:	18		
Required:	True		
Source Field:	DBH_age_2		
Source Table:	Site_Index		
Validation Rule:	(>=10 And <=500)		
Sp_3		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree species for tree 3		
Ordinal Position:	19		
Required:	True		
Source Field:	Sp_3		
Source Table:	Site_Index		

DBH_3	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Tree diameter at breast height in centimeters for tree 3	
Ordinal Position:	20	
Required:	True	
Source Field:	DBH_3	
Source Table:	Site_Index	
Validation Rule:	(>=5 And <= 200)	
Height_3	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Tree height in meters for tree 3	
Ordinal Position:	21	
Required:	True	
Source Field:	Height_3	
Source Table:	Site_Index	
Validation Rule:	(>=3 And <=50)	
DBH_age_3	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Tree age for tree 3	
Ordinal Position:	22	
Required:	True	
Source Field:	DBH_age_3	
Source Table:	Site_Index	
Validation Rule:	(>=10 And <=500)	
Comments	Memo	N/A
AllowZeroLength:	False	
Attributes:	Variable Length, Updateable	
Collating Order:	General	
Description:	Site index comments	
Ordinal Position:	23	
Required:	True	
Source Field:	Comments	
Source Table:	Site_Index	

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Query: FileStructure\_L07\_RegenPlot

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**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	

Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	
Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	
Ordinal Position:	4	
Required:	True	
Source Field:	Target_treatment_code	
Source Table:	Treatment_Plots	
Start_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Measurement start date. This can be measurement of any kind; mortality, tree count, regeneration survey etc.	
Ordinal Position:	5	
Required:	True	
Source Field:	Start_date	
Source Table:	Measurements	
End_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Measurement end date.	
Ordinal Position:	6	
Required:	False	
Source Field:	End_date	
Source Table:	Measurements	
Contractor_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Contractor code for measurement	
Ordinal Position:	7	

Required:	True		
Source Field:	Contractor_code		
Source Table:	Measurements		
Crew_initial_1		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Crew initial 1		
Ordinal Position:	8		
Required:	True		
Source Field:	Crew_initial_1		
Source Table:	Measurements		
Crew_initial_2		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Crew initial 2		
Ordinal Position:	9		
Required:	False		
Source Field:	Crew_initial_2		
Source Table:	Measurements		
Regen_plot_number		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Regen plot number		
Ordinal Position:	10		
Required:	True		
Source Field:	Regen_plot_number		
Source Table:	Regen_plots		
Validation Rule:	(>= 1 And <= 16)		
Decid_sp_1		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Deciduous species 1		
Ordinal Position:	11		
Required:	False		
Source Field:	Decid_sp_1		
Source Table:	Regen_plots		
Decid_count_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree count for deciduous species 1		
Ordinal Position:	12		
Required:	False		
Source Field:	Decid_count_1		
Source Table:	Regen_plots		
Decid_modal_ht_1		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Deciduous species 1 modal height in centimeters		
Ordinal Position:	13		
Required:	False		
Source Field:	Decid_modal_ht_1		
Source Table:	Regen_plots		
Validation Rule:	(>=5 And <=150)		

Decid_modal_diam_1	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Deciduous species 1 modal diameter in centimeters	
Ordinal Position:	14	
Required:	False	
Source Field:	Decid_modal_diam_1	
Source Table:	Regen_plots	
Validation Rule:	(>0 And <=30)	
Decid_sp_2	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Deciduous species 2	
Ordinal Position:	15	
Required:	False	
Source Field:	Decid_sp_2	
Source Table:	Regen_plots	
Decid_count_2	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Tree count for deciduous species 2	
Ordinal Position:	16	
Required:	False	
Source Field:	Decid_count_2	
Source Table:	Regen_plots	
Decid_modal_ht_2	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Deciduous species 2 modal height in centimeters	
Ordinal Position:	17	
Required:	False	
Source Field:	Decid_modal_ht_2	
Source Table:	Regen_plots	
Validation Rule:	(>=5 And <=150)	
Decid_modal_diam_2	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Deciduous species 2 modal diameter in centimeters	
Ordinal Position:	18	
Required:	False	
Source Field:	Decid_modal_diam_2	
Source Table:	Regen_plots	
Validation Rule:	(>0 And <=30)	
Decid_sp_3	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Deciduous species 3	
Ordinal Position:	19	
Required:	False	
Source Field:	Decid_sp_3	
Source Table:	Regen_plots	

Decid_count_3	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Tree count for deciduous species 3	
Ordinal Position:	20	
Required:	False	
Source Field:	Decid_count_3	
Source Table:	Regen_plots	
Decid_modal_ht_3	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Deciduous species 3 modal height in centimeters	
Ordinal Position:	21	
Required:	False	
Source Field:	Decid_modal_ht_3	
Source Table:	Regen_plots	
Validation Rule:	(>=5 And <=150)	
Decid_modal_diam_3	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Deciduous species 3 modal diameter in centimeters	
Ordinal Position:	22	
Required:	False	
Source Field:	Decid_modal_diam_3	
Source Table:	Regen_plots	
Validation Rule:	(>0 And <=30)	
Decid_select_sp	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
ColumnHidden:	False	
ColumnWidth:	1884	
Description:	Tallest deciduous competition tree species	
Ordinal Position:	23	
Required:	False	
Source Field:	Decid_select_sp	
Source Table:	Regen_plots	
Decid_select_ht	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
ColumnHidden:	False	
ColumnWidth:	2112	
Description:	Tallest deciduous competition tree height	
Ordinal Position:	24	
Required:	False	
Source Field:	Decid_select_ht	
Source Table:	Regen_plots	
Validation Rule:	(>=5 And <=1000)	
Decid_select_age	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Decid_select_age is of Regen_plots	
Ordinal Position:	25	
Required:	False	



Source Field:	Decid_select_age		
Source Table:	Regen_plots		
Validation Rule:	(<=20)		
Decid_select_dist_to_crop		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tallest deciduous competition tree distance to crop tree		
Ordinal Position:	26		
Required:	False		
Source Field:	Decid_select_dist_to_crop		
Source Table:	Regen_plots		
Veg_sp_1		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 1		
Ordinal Position:	27		
Required:	False		
Source Field:	Veg_sp_1		
Source Table:	Regen_plots		
Veg_modal_ht_1		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 1 average height in centimeters		
Ordinal Position:	28		
Required:	False		
Source Field:	Veg_modal_ht_1		
Source Table:	Regen_plots		
Validation Rule:	(>=5 And <=100)		
Veg_percent_cover_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 1 percent cover		
Ordinal Position:	29		
Required:	False		
Source Field:	Veg_percent_cover_1		
Source Table:	Regen_plots		
Validation Rule:	(>0 And <=100)		
Veg_sp_2		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 2		
Ordinal Position:	30		
Required:	False		
Source Field:	Veg_sp_2		
Source Table:	Regen_plots		
Veg_modal_ht_2		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 2 average height in centimeters		
Ordinal Position:	31		
Required:	False		

Source Field:	Veg_modal_ht_2		
Source Table:	Regen_plots		
Validation Rule:	(>=5 And <=100)		
Veg_percent_cover_2		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 2 percent cover		
Ordinal Position:	32		
Required:	False		
Source Field:	Veg_percent_cover_2		
Source Table:	Regen_plots		
Validation Rule:	(>0 And <=100)		
Veg_sp_3		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 3		
Ordinal Position:	33		
Required:	False		
Source Field:	Veg_sp_3		
Source Table:	Regen_plots		
Veg_modal_ht_3		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 3 average height in centimeters		
Ordinal Position:	34		
Required:	False		
Source Field:	Veg_modal_ht_3		
Source Table:	Regen_plots		
Validation Rule:	(>=5 And <=100)		
Veg_percent_cover_3		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 3 percent cover		
Ordinal Position:	35		
Required:	False		
Source Field:	Veg_percent_cover_3		
Source Table:	Regen_plots		
Validation Rule:	(>0 And <=100)		
Veg_sp_4		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 4		
Ordinal Position:	36		
Required:	False		
Source Field:	Veg_sp_4		
Source Table:	Regen_plots		
Veg_modal_ht_4		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 4 average height in centimeters		
Ordinal Position:	37		
Required:	False		
Source Field:	Veg_modal_ht_4		

Source Table:	Regen_plots		
Validation Rule:	(>=5 And <=100)		
Veg_percent_cover_4		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 4 percent cover		
Ordinal Position:	38		
Required:	False		
Source Field:	Veg_percent_cover_4		
Source Table:	Regen_plots		
Validation Rule:	(>0 And <=100)		
Veg_sp_5		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 5		
Ordinal Position:	39		
Required:	False		
Source Field:	Veg_sp_5		
Source Table:	Regen_plots		
Veg_modal_ht_5		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 1 average height in centimeters		
Ordinal Position:	40		
Required:	False		
Source Field:	Veg_modal_ht_5		
Source Table:	Regen_plots		
Validation Rule:	(>=5 And <=100)		
Veg_percent_cover_5		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Vegetation species 5 percent cover		
Ordinal Position:	41		
Required:	False		
Source Field:	Veg_percent_cover_5		
Source Table:	Regen_plots		
Validation Rule:	(>0 And <=100)		
Ingress_sp_1		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress species 1		
Ordinal Position:	42		
Required:	False		
Source Field:	Ingress_sp_1		
Source Table:	Regen_plots		
Ingress_count_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress species 1 tree count		
Ordinal Position:	43		
Required:	False		

Source Field:	Ingress_count_1		
Source Table:	Regen_plots		
Ingress_orig_min_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress_orig_min_1 is of Regen_plots		
Ordinal Position:	44		
Required:	False		
Source Field:	Ingress_orig_min_1		
Source Table:	Regen_plots		
Ingress_orig_max_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress_orig_max_1 is of Regen_plots		
Ordinal Position:	45		
Required:	False		
Source Field:	Ingress_orig_max_1		
Source Table:	Regen_plots		
Ingress_orig_mode_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress_orig_mode_1 is of Regen_plots		
Ordinal Position:	46		
Required:	False		
Source Field:	Ingress_orig_mode_1		
Source Table:	Regen_plots		
Ingress_sp_2		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress species 2		
Ordinal Position:	47		
Required:	False		
Source Field:	Ingress_sp_2		
Source Table:	Regen_plots		
Ingress_count_2		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress species 2 tree count		
Ordinal Position:	48		
Required:	False		
Source Field:	Ingress_count_2		
Source Table:	Regen_plots		
Ingress_orig_min_2		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Ingress_orig_min_2 is of Regen_plots		
Ordinal Position:	49		
Required:	False		
Source Field:	Ingress_orig_min_2		
Source Table:	Regen_plots		

Ingress_orig_max_2	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Ingress_orig_max_2 is of Regen_plots	
Ordinal Position:	50	
Required:	False	
Source Field:	Ingress_orig_max_2	
Source Table:	Regen_plots	
Ingress_orig_mod_2	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Ingress_orig_mod_2 is of Regen_plots	
Ordinal Position:	51	
Required:	False	
Source Field:	Ingress_orig_mod_2	
Source Table:	Regen_plots	
Ingress_sp_3	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Ingress species 3	
Ordinal Position:	52	
Required:	False	
Source Field:	Ingress_sp_3	
Source Table:	Regen_plots	
Ingress_count_3	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Ingress species 3 tree count	
Ordinal Position:	53	
Required:	False	
Source Field:	Ingress_count_3	
Source Table:	Regen_plots	
Ingress_orig_min_3	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Ingress_orig_min_3 is of Regen_plots	
Ordinal Position:	54	
Required:	False	
Source Field:	Ingress_orig_min_3	
Source Table:	Regen_plots	
Ingress_orig_max_3	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Ingress_orig_max_3 is of Regen_plots	
Ordinal Position:	55	
Required:	False	
Source Field:	Ingress_orig_max_3	
Source Table:	Regen_plots	
Ingress_orig_mod_3	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	

Description:	Ingress_orig_mod_3 is of Regen_plots		
Ordinal Position:	56		
Required:	False		
Source Field:	Ingress_orig_mod_3		
Source Table:	Regen_plots		
<b>Slash_coverage</b>		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Slash coverage for 1m radius around crop, or around regen plot if no crop tree present.		
Ordinal Position:	57		
Required:	False		
Source Field:	Slash_coverage		
Source Table:	Regen_plots		
Validation Rule:	(>=0 and <= 100)		
<b>Cone_count</b>		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Cone count (all species) for 1m radius around crop, or around regen plot if no crop tree present.		
Ordinal Position:	58		
Required:	False		
Source Field:	Cone_count		
Source Table:	Regen_plots		
Validation Rule:	(<=150)		
<b>Comments</b>		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Regen plot comments		
Ordinal Position:	59		
Required:	False		
Source Field:	Comments		
Source Table:	Regen_plots		

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 Query: FileStructure\_L08\_Trees

Thursday, August 09, 2001

**Columns**

Name	Type	Size
<b>Agency_code</b>	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
<b>Target_eco_class</b>	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	

Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	
Ordinal Position:	4	
Required:	True	
Source Field:	Target_treatment_code	
Source Table:	Treatment_Plots	
Start_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Measurement start date. This can be measurement of any kind; mortality, tree count, regeneration survey etc.	
Ordinal Position:	5	
Required:	True	
Source Field:	Start_date	
Source Table:	Measurements	
End_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Measurement end date.	
Ordinal Position:	6	
Required:	False	
Source Field:	End_date	
Source Table:	Measurements	
Contractor_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Contractor code for measurement	
Ordinal Position:	7	
Required:	True	
Source Field:	Contractor_code	
Source Table:	Measurements	

Crew_initial_1	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Crew initial 1	
Ordinal Position:	8	
Required:	True	
Source Field:	Crew_initial_1	
Source Table:	Measurements	
Crew_initial_2	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Crew initial 2	
Ordinal Position:	9	
Required:	False	
Source Field:	Crew_initial_2	
Source Table:	Measurements	
Tree_number	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Tree tag number	
Ordinal Position:	10	
Required:	True	
Source Field:	Tree_number	
Source Table:	Trees	
Validation Rule:	(>0 And <=4500)	
Regen_plot_number	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Regen plot number	
Ordinal Position:	11	
Required:	True	
Source Field:	Regen_plot_number	
Source Table:	Regen_plots	
Validation Rule:	(>= 1 And <= 16)	
Crop_tree	Yes/No	1
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Is the given tree the crop tree?	
Ordinal Position:	12	
Required:	True	
Source Field:	Crop_tree	
Source Table:	Trees	
Tree_species_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Tree species code	
Ordinal Position:	13	
Required:	True	
Source Field:	Tree_species_code	
Source Table:	Trees	
Tree_source_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	



	Collating Order:	General	
	Description:	Source code for given tree - ingress vs. planted	
	Ordinal Position:	14	
	Required:	True	
	Source Field:	Tree_source_code	
	Source Table:	Trees	
Seedling_position_code			Text 10
	AllowZeroLength:	False	
	Attributes:	Fixed Size, Updateable	
	Collating Order:	General	
	Description:	Seedling position code on scarification	
	Ordinal Position:	15	
	Required:	True	
	Source Field:	Seedling_position_code	
	Source Table:	Trees	
Rooting_media_code			Text 10
	AllowZeroLength:	False	
	Attributes:	Fixed Size, Updateable	
	Collating Order:	General	
	Description:	Rooting media code	
	Ordinal Position:	16	
	Required:	True	
	Source Field:	Rooting_media_code	
	Source Table:	Trees	
Height			Number (Single) 4
	AllowZeroLength:	False	
	Attributes:	Fixed Size, Updateable	
	Collating Order:	General	
	Description:	Height of tree in centimeters	
	Ordinal Position:	17	
	Required:	True	
	Source Field:	Height	
	Source Table:	Trees	
	Validation Rule:	(>0 and >=30)	
Ground_line_diameter			Number (Single) 4
	AllowZeroLength:	False	
	Attributes:	Fixed Size, Updateable	
	Collating Order:	General	
	Description:	Root collar diameter at ground level, in centimeters	
	Ordinal Position:	18	
	Required:	True	
	Source Field:	Ground_line_diameter	
	Source Table:	Trees	
	Validation Rule:	(>0 And <=10)	
Crown_length			Number (Single) 4
	AllowZeroLength:	False	
	Attributes:	Fixed Size, Updateable	
	Collating Order:	General	
	Description:	Length of crown in centimeters	
	Ordinal Position:	19	
	Required:	True	
	Source Field:	Crown_length	
	Source Table:	Trees	
	Validation Rule:	(>0 And <=50)	
Radial_crown_width			Number (Single) 4
	AllowZeroLength:	False	
	Attributes:	Fixed Size, Updateable	
	Collating Order:	General	
	Description:	Radial width of crown in centimeters	

Ordinal Position:	20		
Required:	True		
Source Field:	Radial_crown_width		
Source Table:	Trees		
Validation Rule:	(>0 And <=50)		
Vigour_code		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree vigour code - capture mortality if applicable		
Ordinal Position:	21		
Required:	True		
Source Field:	Vigour_code		
Source Table:	Trees		
Health_code1		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree health code 1.		
Ordinal Position:	22		
Required:	False		
Source Field:	Health_code1		
Source Table:	Trees		
Health_code2		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree health code 2.		
Ordinal Position:	23		
Required:	False		
Source Field:	Health_code2		
Source Table:	Trees		
Internode_growing_year_1		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	First year for internode (previous_year) length measurement.		
Ordinal Position:	24		
Required:	False		
Source Field:	Internode_growing_year_1		
Source Table:	Trees		
Internode_length_1		Number (Single)	4
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	First year internode length.		
Ordinal Position:	25		
Required:	False		
Source Field:	Internode_length_1		
Source Table:	Trees		
Internode_growing_year_2		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Second year for internode (previous_year) length measurement.		
Ordinal Position:	26		
Required:	False		
Source Field:	Internode_growing_year_2		
Source Table:	Trees		

Internode_length_2	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Second year internode length.	
Ordinal Position:	27	
Required:	False	
Source Field:	Internode_length_2	
Source Table:	Trees	
Internode_growing_year_3	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Third year for internode (previous_year) length measurement.	
Ordinal Position:	28	
Required:	False	
Source Field:	Internode_growing_year_3	
Source Table:	Trees	
Internode_length_3	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Third year internode length.	
Ordinal Position:	29	
Required:	False	
Source Field:	Internode_length_3	
Source Table:	Trees	
Internode_growing_year_4	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Fourth year for internode (previous_year) length measurement.	
Ordinal Position:	30	
Required:	False	
Source Field:	Internode_growing_year_4	
Source Table:	Trees	
Internode_length_4	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Fourth year internode length.	
Ordinal Position:	31	
Required:	False	
Source Field:	Internode_length_4	
Source Table:	Trees	
Internode_growing_year_5	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Fifth year for internode (previous_year) length measurement.	
Ordinal Position:	32	
Required:	False	
Source Field:	Internode_growing_year_5	
Source Table:	Trees	
Internode_length_5	Number (Single)	4
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Fifth year internode length.	

Ordinal Position: 33  
 Required: False  
 Source Field: Internode\_length\_5  
 Source Table: Trees

Comments		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
ColumnHidden:	False		
ColumnWidth:	3432		
Description:	Tree comments		
Ordinal Position:	34		
Required:	False		
Source Field:	Comments		
Source Table:	Trees		

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 Query: FileStructure\_L09\_StemMapping

Thursday, August 09, 2001

**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	
Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	

Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	
Ordinal Position:	4	
Required:	True	
Source Field:	Target_treatment_code	
Source Table:	Treatment_Plots	
Start_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Measurement start date. This can be measurement of any kind; mortality, tree count, regeneration survey etc.	
Ordinal Position:	5	
Required:	True	
Source Field:	Start_date	
Source Table:	Measurements	
End_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Measurement end date.	
Ordinal Position:	6	
Required:	False	
Source Field:	End_date	
Source Table:	Measurements	
Contractor_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for contractor performing installation installation	
Ordinal Position:	7	
Required:	True	
Source Field:	Contractor_code	
Source Table:	Installations	
Crew_initial_1	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Crew initials 1	
Ordinal Position:	8	
Required:	True	
Source Field:	Crew_initial_1	
Source Table:	Installations	
Crew_initial_2	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Crew initial 2	
Ordinal Position:	9	
Required:	False	
Source Field:	Crew_initial_2	
Source Table:	Measurements	
Tree_number	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	

Collating Order:	General		
Description:	Tree number. Number used on the tree tag.		
Ordinal Position:	10		
Required:	True		
Source Field:	Tree_number		
Source Table:	Stem_map		
<b>Azimuth_to_tree</b>		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Bearing to tree from plot centre.		
Ordinal Position:	11		
Required:	True		
Source Field:	Azimuth_to_tree		
Source Table:	Stem_map		
Validation Rule:	(>0 And <= 360)		
<b>Distance_to_tree</b>		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Distance to tree from treatment plot centre.		
Ordinal Position:	12		
Required:	True		
Source Field:	Distance_to_tree		
Source Table:	Stem_map		
<b>Comments</b>		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Stem map tree comments		
Ordinal Position:	13		
Required:	False		
Source Field:	Comments		
Source Table:	Stem_map		

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 Query: FileStructure\_L10\_Tending

Thursday, August 09, 2001

**Columns**

<b>Name</b>		<b>Type</b>	<b>Size</b>
<b>Agency_code</b>		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size		
Collating Order:	General		
Description:	Code for company name		
Ordinal Position:	0		
Required:	True		
Source Field:	Agency_code		
Source Table:	Installations		
<b>Target_eco_class</b>		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size		
Collating Order:	General		
Description:	Target numeric ecological class as defined by FGYA (1-5)		
Ordinal Position:	1		
Required:	True		
Source Field:	Target_eco_class		
Source Table:	Installations		

Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size	
Collating Order:	General	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	
Ordinal Position:	4	
Required:	True	
Source Field:	Target_treatment_code	
Source Table:	Treatment_Plots	
Start_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size	
Collating Order:	General	
Description:	Treatment start date	
Ordinal Position:	5	
Required:	True	
Source Field:	Start_date	
Source Table:	Tending	
End_date	Date/Time	8
AllowZeroLength:	False	
Attributes:	Fixed Size	
Collating Order:	General	
Description:	Treatment end date	
Ordinal Position:	6	
Required:	False	
Source Field:	End_date	
Source Table:	Tending	
Contractor_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size	
Collating Order:	General	
Description:	Contractor code for tending	
Ordinal Position:	7	
Required:	True	
Source Field:	Contractor_code	
Source Table:	Tending	
Crew_initial	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size	

	Collating Order:	General	
	Description:	Crew initial is of person performing tending	
	Ordinal Position:	8	
	Required:	False	
	Source Field:	Crew_initial	
	Source Table:	Tending	
Tending_method_code			Text 10
	AllowZeroLength:	False	
	Attributes:	Fixed Size	
	Collating Order:	General	
	Description:	Tending method code	
	Ordinal Position:	9	
	Required:	True	
	Source Field:	Tending_method_code	
	Source Table:	Tending	
Tending_type_code			Text 10
	AllowZeroLength:	False	
	Attributes:	Fixed Size	
	Collating Order:	General	
	Description:	Tending type code	
	Ordinal Position:	10	
	Required:	True	
	Source Field:	Tending_type_code	
	Source Table:	Tending	
Kg_ai_ha			Number (Integer) 2
	AllowZeroLength:	False	
	Attributes:	Fixed Size	
	Collating Order:	General	
	Description:	Kilograms of active ingredient per hectare	
	Ordinal Position:	11	
	Required:	False	
	Source Field:	Kg_ai_ha	
	Source Table:	Tending	
L_ha			Number (Integer) 2
	AllowZeroLength:	False	
	Attributes:	Fixed Size	
	Collating Order:	General	
	Description:	Litres per hectare	
	Ordinal Position:	12	
	Required:	False	
	Source Field:	L_ha	
	Source Table:	Tending	
Knotch_space			Number (Integer) 2
	AllowZeroLength:	False	
	Attributes:	Fixed Size	
	Collating Order:	General	
	Description:	Space between notches	
	Ordinal Position:	13	
	Required:	False	
	Source Field:	Knotch_space	
	Source Table:	Tending	
Comments			Memo N/A
	AllowZeroLength:	False	
	Attributes:	Variable Length	
	Collating Order:	General	
	Description:	Tending comments	
	Ordinal Position:	14	



Required: False  
 Source Field: Comments  
 Source Table: Tending

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb Thursday, August 09, 2001  
 Query: FileStructure\_L11\_Photos

**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength: False Attributes: Fixed Size Collating Order: General Description: Code for company name Ordinal Position: 0 Required: True Source Field: Agency_code Source Table: Installations		
Target_eco_class	Number (Integer)	2
AllowZeroLength: False Attributes: Fixed Size Collating Order: General ColumnHidden: False ColumnWidth: 1860 Description: Target numeric ecological class as defined by FGYA (1-5) Ordinal Position: 1 Required: True Source Field: Target_eco_class Source Table: Installations		
Target_group	Number (Integer)	2
AllowZeroLength: False Attributes: Fixed Size Collating Order: General ColumnHidden: False ColumnWidth: 1620 Description: Target geographic group as defined by FGYA (1-3) Ordinal Position: 2 Required: True Source Field: Target_group Source Table: Installations Validation Rule: (>0 And <=3)		
Target_tree_density_code	Number (Integer)	2
AllowZeroLength: False Attributes: Fixed Size Collating Order: General ColumnHidden: False ColumnWidth: 2616 Description: Target tree density for the given installation Ordinal Position: 3 Required: True Source Field: Target_tree_density_code Source Table: Installations		
Target_treatment_code	Text	10
AllowZeroLength: False Attributes: Fixed Size Collating Order: General ColumnHidden: False ColumnWidth: 2460		

Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin		
Ordinal Position:	4		
Required:	True		
Source Field:	Target_treatment_code		
Source Table:	Treatment_Plots		
Photo_date		Date/Time	8
AllowZeroLength:	False		
Attributes:	Fixed Size		
Collating Order:	General		
ColumnHidden:	False		
ColumnWidth:	1308		
Description:	Date photo was taken		
Ordinal Position:	5		
Required:	True		
Source Field:	Photo_date		
Source Table:	Photos		
Initials		Text	10
AllowZeroLength:	False		
Attributes:	Fixed Size		
Collating Order:	General		
ColumnHidden:	False		
ColumnWidth:	804		
Description:	Initials of person taking photo		
Ordinal Position:	6		
Required:	False		
Source Field:	Initials		
Source Table:	Photos		
Location_desc		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length		
Collating Order:	General		
Description:	Description of where photo was taken from		
Ordinal Position:	7		
Required:	True		
Source Field:	Location_desc		
Source Table:	Photos		
Direction_azimuth		Number (Integer)	2
AllowZeroLength:	False		
Attributes:	Fixed Size		
Collating Order:	General		
Description:	Direction faced when photo was taken.		
Ordinal Position:	8		
Required:	True		
Source Field:	Direction_azimuth		
Source Table:	Photos		
Validation Rule:	(>0 And <=360)		
Photo		OLE Object	N/A
AllowZeroLength:	False		
Attributes:	Variable Length		
Collating Order:	General		
Description:	Photo of installation as a an OLE object		
Ordinal Position:	9		
Required:	True		
Source Field:	Photo		
Source Table:	Photos		
Comments		Memo	N/A
AllowZeroLength:	False		
Attributes:	Variable Length		

Collating Order: General  
 Description: Photo comments  
 Ordinal Position: 10  
 Required: False  
 Source Field: Comments  
 Source Table: Photos

R:\FMFGIS\Projects\FGYA\Data\FGYA.mdb  
 Query: FileStructure\_L12\_Trees\_FillPlant

Thursday, August 09, 2001

**Columns**

Name	Type	Size
Agency_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Code for company name	
Ordinal Position:	0	
Required:	True	
Source Field:	Agency_code	
Source Table:	Installations	
Target_eco_class	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target numeric ecological class as defined by FGYA (1-5)	
Ordinal Position:	1	
Required:	True	
Source Field:	Target_eco_class	
Source Table:	Installations	
Target_group	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target geographic group as defined by FGYA (1-3)	
Ordinal Position:	2	
Required:	True	
Source Field:	Target_group	
Source Table:	Installations	
Validation Rule:	(>0 And <=3)	
Target_tree_density_code	Number (Integer)	2
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target tree density for the given installation	
Ordinal Position:	3	
Required:	True	
Source Field:	Target_tree_density_code	
Source Table:	Installations	
Target_treatment_code	Text	10
AllowZeroLength:	False	
Attributes:	Fixed Size, Updateable	
Collating Order:	General	
Description:	Target treatment code for the treatment plot - Control, Weed, Thin, Weed and Thin	
Ordinal Position:	4	

Required:	True		
Source Field:	Target_treatment_code		
Source Table:	Treatment_Plots		
Tree_number	Number (Integer)		2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Tree tag number		
Ordinal Position:	5		
Required:	True		
Source Field:	Tree_number		
Source Table:	Trees		
Validation Rule:	(>0 And <=4500)		
Regen_plot_number	Number (Integer)		2
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Regen plot number		
Ordinal Position:	6		
Required:	True		
Source Field:	Regen_plot_number		
Source Table:	Regen_plots		
Validation Rule:	(>= 1 And <= 16)		
Fill_plant_date	Date/Time		8
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Date of fill plant.		
Ordinal Position:	7		
Required:	True		
Source Field:	Fill_plant_date		
Source Table:	Trees_fill_plant		
Stock_code	Text		10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Seedling stock code.		
Ordinal Position:	8		
Required:	False		
Source Field:	Stock_code		
Source Table:	Trees_fill_plant		
Plant_stock_season_code	Text		10
AllowZeroLength:	False		
Attributes:	Fixed Size, Updateable		
Collating Order:	General		
Description:	Target season for planting stock - spring or summer.		
Ordinal Position:	9		
Required:	False		
Source Field:	Plant_stock_season_code		
Source Table:	Trees_fill_plant		
Comments	Memo		N/A
AllowZeroLength:	False		
Attributes:	Variable Length, Updateable		
Collating Order:	General		
Description:	Comments is of Trees_fill_plant		
Ordinal Position:	10		
Required:	False		
Source Field:	Comments		
Source Table:	Trees_fill_plant		