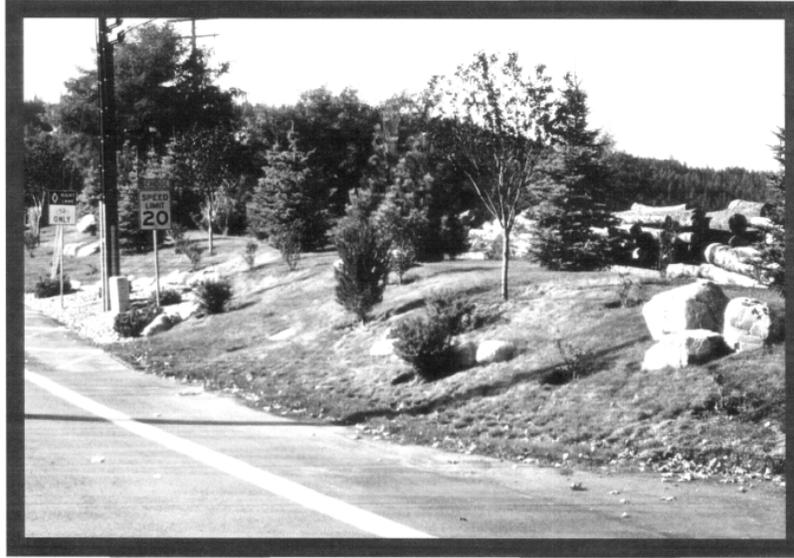


# Wood and Mill Yard Debris



# Technical Guidance Manual

**ABOUT THE COVER**

The landscaped area in the cover photo is a sight-obscuring berm constructed of log yard debris. It is located in Coeur d'Alene next to North Idaho College and a popular public beach. This use of debris is described on page 6-10.1

# **WOOD AND MILL YARD DEBRIS**

## **TECHNICAL GUIDANCE MANUAL**

February 1998  
Revised March 31, 2004

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# **PURPOSE, INTENT, AND USE OF THE TECHNICAL GUIDANCE MANUAL**

## **PURPOSE AND INTENT**

The purpose of this document is to provide practical and approved best management plans for the handling, use, or disposal of wood and mill yard debris (wood debris). This has been accomplished by examining the management alternatives that are currently in use in the Northwest, evaluating their compliance with Idaho's solid waste rules, and describing the features of each method. Distribution of this manual is intended to make the alternatives widely known and available among industry and waste managers so they may make decisions regarding the final disposition of log yard debris with assurance that they are using a safe and acceptable method. Each alternative has been examined by the Wood and Mill Yard Debris Committee, which includes industry, government and technical representatives that have agreed on the use and restriction of each method. Each alternative can be treated as a proposal made on behalf of anyone using wood debris and accepted by the solid waste regulatory agencies throughout Idaho.

The Technical Guidance Manual (TGM) itself is designed to be an expandable document. It will be revised and updates will be available to anyone with an older edition. This will make new management techniques available to the industry in the fastest possible manner. The manual does not limit options. Alternative methods for use and disposal of wood debris may be approved in the same manner that it has been in the past. Establishment of the TGM is intended to make existing options known and easily implemented.

The decisions to include specific alternatives in the manual were based on:

- Protection of public health,
- Protection of ground and surface water,
- Use and minimization of waste,
- Assurance of regulatory compliance, and
- Practical application.

## **USE OF THE MANUAL**

The TGM is a resource book that can assist managers in deciding the best ways for them to manage their wood debris. Since the alternatives have already been approved, it goes a step beyond mere information because it eliminates much of the uncertainty regarding the ability of the industry to obtain approval.

Most of the alternatives require no approval or notification of their use. They have been determined to have potential impacts that are low enough that it is inappropriate for agencies to review.

Some alternatives will require permitting. If a permit is required, you will need to contact the local District Health Department and the Department of Environmental Quality (DEQ) for assistance. Other agencies may have jurisdiction over a particular management alternative. This often includes county and some federal agencies. After reviewing the site, the District will be able to direct you to the other agencies and explain the Committee's role and approval of the option.

Existing disposal sites that desire to qualify for exemption from the Solid Waste Management Rules, by applying the WMYD TGM shall, within two (2) years from the adoption by reference of the TGM, comply with alternative uses and Wood and Mill Yard Debris Landfill Criteria Sections.

If you are suggesting a new alternative, it will have to be reviewed by the Health District and DEQ. The review may include consultation with the Wood and Mill Yard Debris Committee. If approved, the new alternative will be added to the manual and made available to anyone that may wish to use it. Your feedback is important to the long-term success of this effort.

# INTRODUCTION

## WOOD AND MILL YARD DEBRIS TECHNICAL GUIDANCE MANUAL

This manual references methods for the use and disposal of accumulated wood and mill yard debris which consists of wood fiber materials with components of soil, rock, and moisture. It also addresses blending of boiler ash with wood debris for management and disposal. Debris is generated within wood and mill yards during the process of manufacturing wood products.

The Wood and Mill Yard Debris Technical Guidance Manual is needed for the following reasons:

- defining the broad application of the term “wood waste,”
- recognizing the variable composition, quantity, age and location of accumulated debris,
- identifying innovative uses of wood and mill yard debris as recycling and economic value of the material changes, and
- providing an acceptable approach to address the use and disposal of wood and mill yard debris as a type of non-municipal solid waste.

## GOALS

The goals of the TGM are as follows:

- to protect human health,
- to protect ground water,
- to protect surface water, and
- to comply with environmental regulation.

To achieve these goals the Technical Guidance Committee has reviewed the solid waste rules, developed appropriate definitions, identified existing wood and mill yard debris practices, and developed approved alternative practices.

# TECHNICAL GUIDANCE COMMITTEE

The Wood and Mill Yard Debris Technical Guidance Committee (wood debris TGC) is established by Idaho Code section §39-173. The committee is required to be composed of seven (7) individuals and shall include:

- One DEQ representative,
- Two District Health Department Representatives,
- Two Forest Industry Representatives, and
- Two Wood and Mill Yard Debris Technical Representatives.

Committee members are appointed by the Director of the Department of Environmental Quality and serve three (3) year terms. No committee member may serve more than two (2) full terms. The DEQ representative is charged with providing administrative and other support to the committee. The committee is required to meet at least twice a year in a location most convenient to a majority of the members.

The duties of the committee include:

1. Developing a TGM for the use, storage, management and disposal of wood and mill yard debris.
2. Considering and developing specific solutions for wood or mill yard debris use, storage, management or disposal as needed.
3. Developing and sharing knowledge related to the use, storage, management and disposal of wood or mill yard debris including ways to constructively use or reclaim the debris.
4. Making recommendations for any permits, rules, or legislation.
5. The wood debris TGC is to be the custodian of this wood debris TGM.

The printing of this Technical Guidance Manual (TGM) and evaluation of existing alternative uses and disposal of wood and mill yard debris was paid for by a grant from the US Environmental Protection Agency (EPA) Region X. This TGM is the result of a unique cooperative agreement and partnership between the forest products industry, the District Health Departments, the Department of Environmental Quality and the EPA. Through the negotiated development of this TGM and the partnership that has been formed, a statewide consensus for application of the approved alternative uses has been achieved.

The following individuals served as the original members of the Technical Guidance Committee:

John Emery, Potlatch Corporation  
Ed Hale, Panhandle District Health Department  
Carl Martin, Idaho Forest Industries\*  
Bill Lillibridge, North Central District Health Department  
Ron Mensch, Twin Creek Enterprises  
Representative Don Pischner  
Barry Burnell, Division of Environmental Quality

\* K.C. Hansen replaced Carl Martin on the TGC.

The following is a list of the current members serving on the Technical Guidance Committee:

Ron Mensch, Twin Creek Enterprises  
Erik Ketner, Panhandle District Health Department  
Dan Johnson, North Central District Health Department  
Don Pischner, Stimpson Lumber Company  
Bernie Wilmarth, Potlatch Corporation  
Kevin Greenleaf, Louisiana Pacific Corp.  
Dean Ehlert, Department of Environmental Quality

Technical Guidance Manuals may be obtained from the Panhandle District Health Department located at 2195 Ironwood Court, Coeur d'Alene, ID, 83814, (208) 667-9513. For a current list of TGC members, please contact either the District Health Department or the DEQ.

# **CURRENT WOOD DEBRIS MANAGEMENT PRACTICES**

## **LEGISLATIVE BACKGROUND**

Non-municipal waste (including wood yard debris) is governed by Idaho Code, chapter 1 title 39 and regulations derived from that 1973 law. The 1973 regulations covered municipal and non-municipal waste. In 1991, the US Environmental Protection Agency adopted new federal requirements for solid waste disposal (known as Subtitle D). The new regulations focused on municipal waste, and made no attempts to address non-municipal waste disposal, processing, transfer, collection, and storage. The state regulations were rewritten in 1992 (the Christmas Day regulations) in an effort to remove conflicts with the federal laws. The Christmas Day revisions, however, left vague standards and unclear permitting procedures for non-municipal waste.

To address the vague standards in regards to wood debris management, Representative Pischner introduced House Bill 696. The Second Regular Session of the 1996 Legislature of the State of Idaho passed House Bill 696, establishing a Technical Guidance Committee to “develop guidance on the use, storage, management and disposal of mill yard or wood debris.” House Bill 696 amended the Environmental Protection and Health Act by adding sections 39-171 through 174. Section 39-171 provides the legislative findings and purpose, Section 39-172 lists the definitions, Section 39-174 identifies the committee members and terms and Section 39-174 details the committee’s duties. The TGC is expected to produce a guidance manual similar to that currently used for septic systems in Idaho. This manual will provide several management and disposal options and will be allowed to develop and expand with the advent of new technologies and disposal problems.

The technical guidance committee meetings began on August 15<sup>th</sup>, 1997 and continued monthly until January 1998. A final draft of the manual was approved at the January 1998 meeting and printed on February 25, 1998.

To address the vague standards in the Christmas Day revisions, negotiated rulemaking was initiated in 1997. As a result of this negotiated rulemaking, revisions to IDAPA 58.01.06 received final approval from the state legislature in the spring of 2003. The 2003 revisions recognize this manual and provide a specific exemption from the solid waste rules for wood and mill yard debris managed in accordance with this manual (IDAPA 58.01.06.001.03.a.v). In IDAPA 58.01.06.009.05, all wood and mill yard debris facilities not complying with the manual shall be regulated as a Tier I facility for a period of one year starting on April 1, 2003. Thereafter, all wood or mill yard debris facilities not operating in accordance with the manual will be regulated as a Tier I facility unless, based on a site-specific criteria, the DEQ determines the facility is more appropriately regulated under a different tier classification within the rules.

Due to the changes in the Solid Waste Management Rules, interest in holding committee meetings renewed. Subsequent meeting were held in 2001, 2002 and 2003 to discuss needed changes to the manual. Updates to the manual were approved on March 31, 2004.

## **WOOD DEBRIS MANAGEMENT**

### **Mill Operations Background**

During normal operations, a wood products mill must sort, stack, and move large numbers of logs around the mill. As a consequence of these activities, significant volumes of log yard debris, consisting primarily of dirt and rock with smaller amounts of wood and bark, are formed. The bark and wood are typically driven over many times by yard equipment, mixing them with mud and rock, eventually making them unsuitable for fuel use. The debris is customarily scraped into piles and taken to fill areas when a sufficient amount has been accumulated. Typical debris production is 100 to 700 cubic yards per million board feet of logs processed. Historically, this material was landfilled near the producing yard, filling low areas and small draws.

### **Wood Debris Minimization**

There are several areas at a log handling facility where it is appropriate to consider methods to minimize the accumulation of wood debris. These methods are:

- Surfacing usually involving an all-weather surface such as asphalt pavement or concrete,
- Centralized sorting and scaling where sorting is done using grapple loaders surrounded by bunks and scaling is confined to a designated area, and
- Good housekeeping, not only around the log yard but the entire plant site.

### Surfaced Log Yards

Surfaced log yards can reduce the accumulation of wood and mill yard debris. Bark and woody material recovered from a surfaced log yard can be marketed as boiler fuel or beauty bark, depending on the species being handled and local market opportunities. Some mills are able to market the unground material from the log yard to beauty bark suppliers, while other mills choose to grind the wood debris in the mill hog with the bark being generated from log debarking operations. This material can be sold as boiler fuel and beauty bark.

Advantages to surfaced log yards are reduced debris generation rates and a decrease in the associated costs for debris disposal. Observations of paved log scaling areas show that the amount of bark and broken logs from paved log yards can be less than 50 % of that from unsurfaced areas. Other benefits of a surface yard are reduced operating costs in such areas as rolling stock repairs, tires, fuel and labor. Surfaced log yards also provide for less log breakage, fewer saw changes, and less downtime will be experienced in the sawmill. Because of improved equipment travel time and less time involved in picking up logs from a firm, even surface, efficiency of the rolling stock is greatly increased. Rock replacement costs can also be eliminated and with proper maintenance a paved log yard will never again be rocked.

## Centralized Sorting and Scaling

Centralized sorting and scaling can significantly reduce log yard debris. Under this scenario, all logs are taken to a grapple loader for sorting. Quite often, this loader is surrounded with bunks to hold the sorted logs. This maximizes bark from the handling of logs to a confined area which allows most of this bark to be taken to the mill hog on a regular basis before it has become decomposed or contaminated. Scaled loads are also taken to this centralized sorting area rather than sorting on the landing. By scaling logs in a central area, wheel loader forks digging into the landing is minimized and wear on the landing surface is reduced, thus reducing the generation of log yard debris.

A variation of this approach places unsorted logs into one or two decks as they are removed from the trucks or the scaling area. These decks will be built as high as the wheel loader can reach and a grapple loader works the opposite end of the deck. The grapple loader bunches logs by species with the most predominant species being left on the deck area. The sorted logs are taken to the storage decks with the wheel loader. This approach concentrates most of the bark in a small area where much of it can be recovered. Because the grapple loader is working from a fairly high deck, the bunches of sorted logs will be larger, resulting in fewer trips to the storage decks, lighter impact on the yard surface, and less log yard debris.

## Good Housekeeping

Many mills are disposing of the bark and broken logs from the feed deck by hauling it out to the log yard. This material is usually reasonably fresh with a minor amount of rock and dirt. Some mills are having good success feeding this material into the mill hog and marketing it as hog fuel. Hand picking of rock or screening is sometimes used to improve fuel quality.

Mill cleanup materials (spilled chips or sawdust, or board scraps) can also find their way into the log yard. This material makes excellent fuel. Minimizing leakage at byproduct bins, conveyors, and other transfer points can also reduce the amount of debris to be disposed.

## **Debris Reclamation**

For most mills, wood debris is a potential resource. If kept fairly clean, the debris can be collected and used as a feedstock, hogged for fuel, or mulched for resale. By treating wood debris as a resource, building design and operation plans can be modified to recapture it.

Some mills have specially designed their log storage areas with debris recovery in mind. They have paved their lots to increase the quality of the recovered debris. Others have opted for less costly approaches, such as placing a geotextile liner below their fill rock to prevent dirt from “oozing up” during wet periods. Drainage ditches, storm water bypasses, and low water flow log deck sprinklers can decrease standing water and mud. Such modifications greatly decrease the amount of dirt and rock contamination in the wood debris, while also decreasing the wear on yard equipment from mud bogs. Mills that have improved their log sorting and scaling areas by paving or using geotextile liners have greatly reduced the amount of log yard debris requiring disposal. The wood fiber is fairly free of dirt and rock, making it acceptable for hog fuel. Through the implementation of this manual, the promotion of log yard improvements, and the adoption of other practical alternative uses for log yard debris, it is the intent of the TGC that extensive reuse of wood and mill yard debris may be achieved.

## Storage

Wood and mill yard debris management practices for the storage of debris are critical to mill operations and protecting the environment. The following storage practices should be considered in developing a debris storage management plan:

1. Debris storage practices must minimize fire potential. A fire hazard exists when stockpiling wood and mill yard debris in large loose piles. In order to prevent the spontaneous combustion of wood debris stockpiles, wind-rowing and compaction of the stockpiles is preferred to large “mountainous” stockpiles.
2. Debris storage practices must prevent the generation of leachate which could adversely affect water quality.
3. Run-off of pollutants from stockpiles needs to be considered in the location and management of debris storage areas.

## Wood and Mill Yard Debris Processing

There are several processing options for log yard debris including: hogging, screening, water bath classifiers, air knife classifiers and sand density classifiers. These options sort the debris into components that have beneficial uses: fines are used in a soil mix; reclaimed wood fiber is used for beauty bark, cattle bedding, or composting bulking agent; and rocks are used as a landscape material or returned to the mill for use in the log deck area.

Figures 1 and 2 are process diagrams of a typical sawmill and panelmill showing the wood fiber and wood debris streams as they are typically created at the mill.

The following is a brief description of several different processes to classify wood and mill yard debris materials. The resulting classified materials are considered products to use, sell or donate.

1. Water Bath Classifier: Log yard debris is processed through a vibratory or rotary screen to remove the fines, the larger material is further processed through a water bath. The rocks sink to the bottom of the water bath and the cleaned wood fiber is ground and marketed for mulch or fuel.
2. Air Knife Classifier: Log yard debris is processed through a vibratory or rotary screen to remove the fines, the larger material is removed via air knife.
3. Sand Density Classifier: Log yard debris is processed through a rotary trommel screen to remove the fines, the larger material is further processed with a sand density separator where the rocks fall out through the bottom and the wood fiber/bark/chips are separated out through the top.
4. Hog: Clean wood debris is ground and marketed as boiler fuel or other products. Occasionally, hand picking of rocks from the debris is also done before hogging.
5. Mechanical Screen: Log yard debris is separated by size, usually to remove the very fine material, as a preliminary step to further processing.

FIGURE 1

# PROCESS DIAGRAM OF TYPICAL SAWMILL OPERATION SHOWING WOOD FIBER AND WOOD WASTE STREAMS

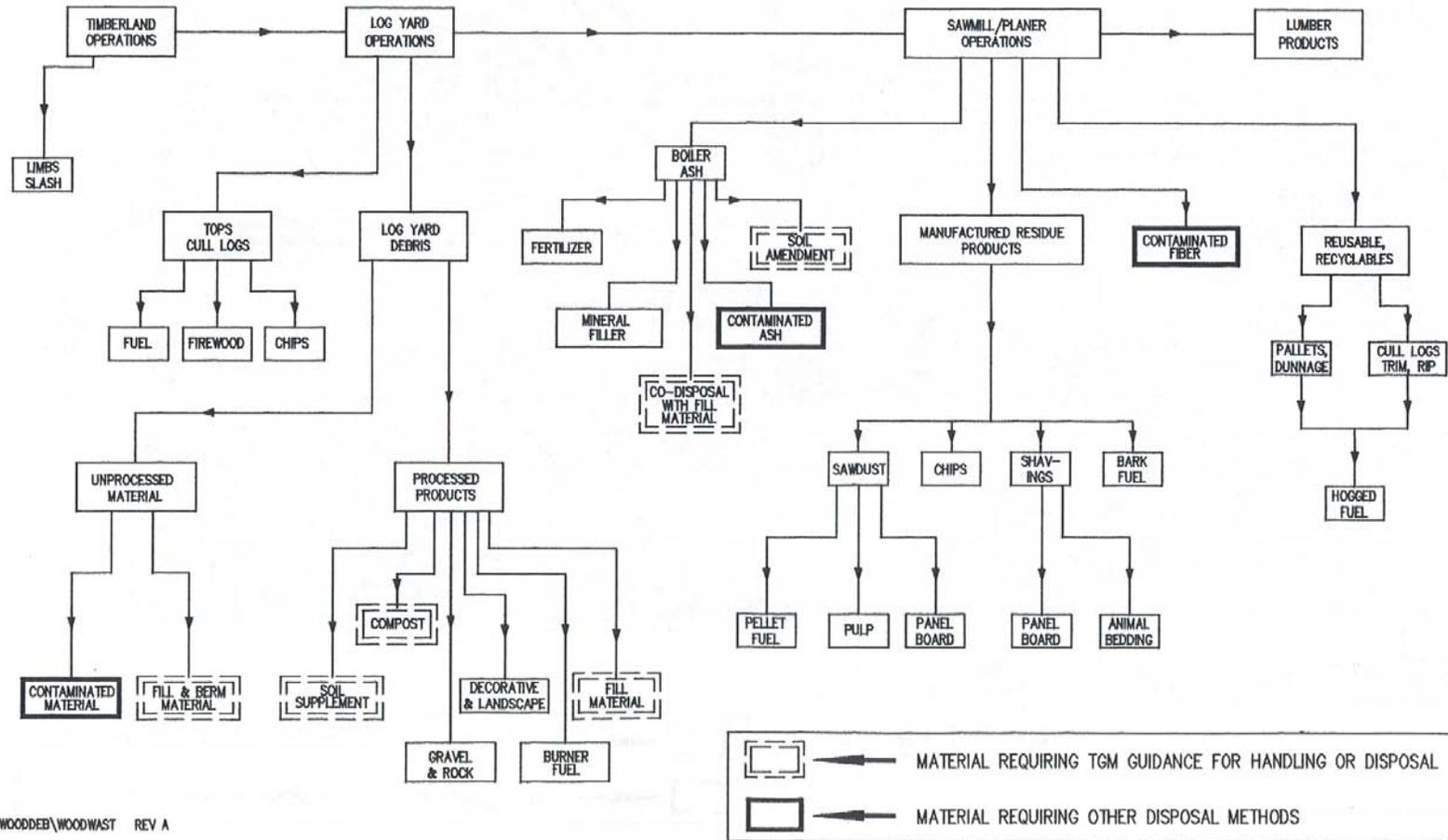
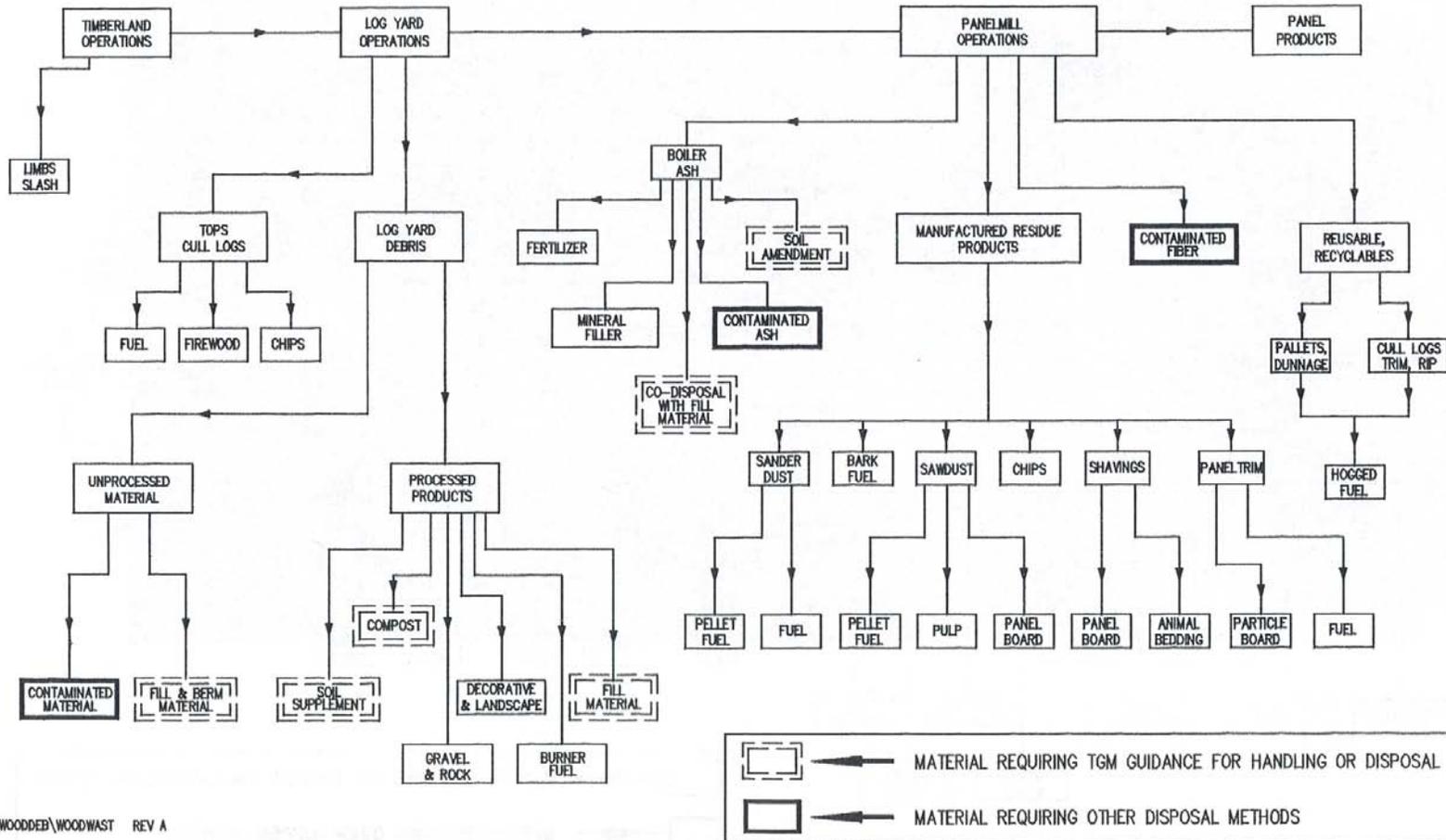


FIGURE 2

# PROCESS DIAGRAM OF TYPICAL PANELMILL OPERATION SHOWING WOOD FIBER AND WOOD WASTE STREAMS



# GENERAL MANAGEMENT ISSUES

## SOLID WASTE RULE APPLICABILITY

All rules pertaining to a solid waste disposal facility shall be applicable, except as modified in this section for each alternative.

## WATER QUALITY CONCERNS

Many of the options for the use of log yard debris include the construction of some type of structure; it may be a road, berm or a landfill. Any of these activities, as well as some others that are described in this guidance, raise concerns over potential effects on water quality. The actual potential for impact varies widely based on the volume of material being used, the surroundings of the project, and the content of the debris. The projects described in the guidance manual are based on suitability of log yard debris from a solid waste perspective. Any project may be regulated (and likely is) by other laws and rules that are the responsibility of other agencies. Meeting the requirements in the Technical Guidance Manual will ensure compliance with Idaho's regulations regarding solid waste. There are other rules at the federal, state and local level that may affect your project depending upon the location and exact nature of your proposed activity.

### Other Agencies with Potential Oversight

In general, it is recommended that you contact the following agencies before pursuing projects suggested in this guidance manual.

- City where project is located (typically the planning and zoning department). Cities may have their own restrictions and requirements for some types of projects.
- County where project is located (typically the planning and zoning department). Conditional use permits may be required and some counties have stormwater control rules.
- Idaho Department of Environmental Quality (DEQ). Impacts on surface and ground water are regulated by DEQ.
- Idaho Department of Fish and Game. Water Quality often affects fish habitat which is regulated by this agency.
- Idaho Department of Water Resources. Regulates alterations to stream channels in Idaho.
- U.S. EPA. Has authority for sites over five acres that discharge stormwater. Note, County ordinances have recently been adopted that address stormwater runoff.
- U.S. Army Corps of Engineers. Projects involving navigable waters, filling and dredging, and wetlands will be a concern of this agency.

The only way to be certain that you are in compliance is to contact these agencies with details of the intended project. No other source can offer accurate information regarding their duties.

## **BOILER ASH**

Most facilities that produce wood debris will also produce some quantity of boiler ash from their steam plant. Many studies have addressed the impacts of adding boiler ash to wood debris, both for land application and disposal. While no maximum allowable percentage of boiler ash has been determined, the following volumes have been shown to have no adverse environmental impacts:

- For land application, 2% boiler ash in wood debris, by volume.
- For disposal, 6% boiler ash in wood debris, by volume.

Use of boiler ash exceeding these percentages may be approved by the applicable agency. Ash used for these purposes cannot exhibit hazardous characteristics.

# **ALTERNATIVE USES OF WOOD AND MILL YARD DEBRIS**

## **FIREWOOD**

**Description:** The distribution of cull logs, ends, and limbs for use in individual fireplaces and stoves. Some mills provide these materials to employees and/or the public free of charge.

### **Materials:**

1. Cull Logs, broken ends and limbs.

## **HOG FUEL**

**Description:** Bark and cull wood from the log yard is ground in a hogging operation to produce boiler fuel for use in wood fired boilers. Hog fuel is used to generate steam for the purpose of drying lumber or power generation.

### **Materials:**

1. Bark, logs, broken logs, and limbs.

### **Construction Practices:**

1. Burners must be designed or adapted to use hog fuel and be tolerant of noncombustible materials. "Tramp tolerant" burners have proven successful in burning a mixture of hog fuel, dirt and rock.
2. Soils and dirt are removed from the hog fuel to minimize noncombustible material.

## LANDFILL ALTERNATIVE DAILY COVER AND FINAL COVER MATERIAL

**Description:** Use wood and mill yard debris as an alternative daily cover and final cover material at municipal and other solid waste landfills.

### Materials:

1. Wood and mill yard debris, (with a high percentage of soil), lends itself to use as alternative daily cover material. In no case shall log yard debris with greater than 40% organic material, by weight, be used as alternative daily cover without sequencing the use of the material with soil.
2. Wood and mill yard debris shall be sized to 1½ inch minus for municipal solid waste landfills.
3. Boiler ash in any ratio may be mixed with the log yard debris.
4. Wood and mill yard debris may be used as the vegetative cover material for the final cap on a solid waste landfill.
5. Compliance with Items 1-4 above meets the Idaho Solid Waste Facilities Act (39-7401 et. seq.) or the Solid Waste Management Rules (IDAPA 58.01.06) for daily cover.

### Examples:

1. Fighting Creek Landfill used several thousand yards of log yard debris with about 40% or less organic material.
2. Donnelly MSWLF used processed segregated wood waste for erosion control of the final cover.

## LAND RECLAMATION AND EROSION CONTROL

**Description:** The use of log yard debris as an erosion cover, organic matter and topsoil for reclamation sites with low organic matter soils, soils prone to erosion, or soils poorly suited to revegetation. Reclamation sites may be those lands resulting from construction excavations, non-hazardous mine spoils and tailings, landfill closure, or contaminant remediation. By providing pathways for water infiltration into the soil, log yard fines can reduce the potential for erosion. Larger log yard debris materials are best suited as soil cover to control erosion where fast revegetation is not desired. Large woody materials on the soil surface minimize direct impact of rain droplets with the soil and slow water flow velocities to reduce sediment transport. Erosion control applications with large debris are better suited to revegetation with planted shrubs or trees.

### Materials:

1. Log yard debris less than 6 inches.

### Recommended Construction Practices:

1. Log yard debris may be stockpiled on the reclamation site prior to use as specified in the storage section (see storage).
2. Spread materials using a manure spreader, bull dozer, grader, or other suitable method.
3. Land reclamation
  - a. Spread in uniform lifts and mix into the upper 6" to 18" of existing soil with a rototiller, mold board plow, chisel plow, or other suitable equipment.
  - b. Evaluate the need for extra fertilizer (to help decompose the woody debris) by using soil tests and observed crop response. Add extra nitrogen fertilizer in increments during the course of the growing season to provide a moderate but steady supply of nitrogen for wood and bark decomposition. The first application of supplemental nitrogen could be added at the time of debris placement to supplement the nutrient needs of the plant cover.
  - c. Allow a minimum of two weeks for soils to acclimate prior to planting. Time plantings to coincide with spring or fall rainfall depending on the desired vegetation. Contact the local office of the Idaho Department of Lands or the Agriculture Extension Office for a list of low maintenance plants for your area.
4. Erosion control
  - a. Screened material 1" minus may be used as a substitute for "reclamation grade compost."

- b. Six inch (6”) minus wood debris can be used for erosion control.
- c. Recommended practices:
  - 1) Spread in specified lifts and do not incorporate into the soil. Leave on the surface as cover.
  - 2) Grasses, shrubs, trees, and landscaping plants may be planted immediately after application.
  - 3) Care should be taken to avoid compacting the soil and erosion control layer.

**Land Reclamation Examples:**

- 1. Cataldo Mission State Park land reclamation demonstration project. Cottonwood trees were planted following screened log yard material application and incorporation in flood plain soils.
- 2. Coeur d’Alene Airport land reclamation demonstration test plots. University of Idaho researchers applied and incorporated various rates of logyard materials into the soil in test plots. The plots were planted to alfalfa and grasses to evaluate and demonstrate the use of log yard debris for soil amendment and reclamation uses.

Campbell, A.G., Zeng, M., Mahier, B.. L., “Log Yard Fines as a Soil Amendment: Pot and Field Studies” *Communications in Plant and Soil Science*, Vol. 24, pages 2025-2041, 1993.

## LANDSCAPING MATERIALS

**Description:** Landscaping practices can use many of the components of log yard debris. For example: processed wood and mill yard debris is used for decorative cover, “beauty bark”, mulch, a component of soil mix, or as a compost bulking agent.

### General Guidelines:

1. Log yard debris fines for landscaping mulch applications generally must be 3/4” or less in size. Sizes as small as 3/8” are often desired by landscape suppliers for use in topsoil mixes. Mulches can be larger in size.
2. Beauty bark should be kept clean of soil or other foreign matter. This generally requires storage separate from other materials on a hard clean surface.
3. Landscape bark products and wood chips are sold based on size and tree species.
4. Woody bulking agents promote aeration and odor-free composting by breaking up clumps of organic material, reducing the overall moisture content, and controlling carbon:nitrogen ratio. Log yard debris size, mineral, moisture, and carbon content all influence the suitability and need for amendments to achieve a good compost.

### Examples:

1. Idaho Forest Industries, Coeur d’Alene, Idaho - bark off of the paved sorting yard is sold as a component of beauty bark.
2. Stimpson Lumber Co., Bonner, Montana - clean bark from the log yard is sold as a component for beauty bark.
3. Idaho Cedar Sales, Troy, Idaho - rakes the log yard to separate the cedar bark and grinds the bark into beauty bark for local markets.
4. Plum Creek, Arden, Washington - stockpiles fines for use by Moore Penn-A-Mulch (Spokane Washington) as mulch.
5. EKO-Comp, Missoula, Montana and Lewiston, Idaho - use log yard debris as a compost bulking agent.
6. American Timber, Olney, Montana - produces “Glacier Gold Compost” with log yard debris.
7. Castle Composting, Boise, Idaho - uses log yard debris as a compost bulking agent.
8. Pacific TopSoil, Bothel, Washington - uses log yard debris as a compost bulking agent.

## **ROAD FILL**

**Description:** The use of wood and mill yard debris as fill material for road or pathway construction to reduce the cost or weight of fill material.

### **Guidance:**

Anyone planning a road fill project may need to obtain a permit or approval from federal, state or local agencies that may have jurisdiction over the proposed project.

### **Factors to consider when using wood and mill yard debris for road fill:**

1. Particle size of the fill should be variable to promote cohesion of compacted material.
2. Wood fragments large enough to cause bridging (the creation of voids or air spaces) in the fill should be removed prior to placing the wood and mill yard debris. Air voids in the fill should be avoided to prevent structural failure and draft spaces in the unlikely event of a fire.
3. Wood and mill yard debris is a natural product and is prone to biological decomposition. This causes a slow breakdown of the material and results in settling. Settling should be considered in the design. The amount of settling will depend on the size, percentage and age of the wood fragments. Older wood and mill yard debris with large wood fragments and a large percentage of soil mixed with it will decompose at the slowest rate.
4. Wood and mill yard debris used for roadfill should not contain foreign materials such as metal or volatile compounds. These contaminants can increase the risk of fire.
5. Material should be placed and compacted in lifts. The depth of each lift should vary based on the size of the equipment used to place the wood and mill yard debris. Lifts should never exceed two (2) feet even with large equipment (D-8), smaller lifts should be used with smaller equipment. During compaction grade of the working slope should not exceed fifteen (15%) percent.
6. Most wood and mill yard debris has a large nitrogen uptake that needs to be compensated for with fertilizer.

### **Examples:**

1. St. Maries Bridge approaches 1970.
2. Highway 2 Wrenco Loop section, 1995 used 80,000 yd<sup>3</sup> of wood and mill yard debris.
3. St. Maries Airport runway, circa 1970.
4. Highway 95 north of Sandpoint, 11,000 yd<sup>3</sup> of ground scrap veneer, 1997.

## SOIL AMENDMENTS

**Description:** The use of wood debris as a soil supplement can improve water infiltration rates, improve soil structure, increase soil organic matter, and in the long term, improve crop productivity. This is especially true of soils with a high clay content or very sandy soils. Smaller sized log yard debris up to two to three inches are suited for organic matter and topsoil applications. Larger log yard debris has been deep plowed and mixed into soils up to three feet deep. (Registration of log yard debris as a soil amendment is required by the Idaho Department of Agriculture.)

### Materials:

1. Log yard debris and or fines.
2. “Fine” grade screened material (<2 inch) is commonly used as a soil amendment resulting in good soils structure when decomposition is complete. However, nitrogen balance of the soil during decomposition must be carefully managed for optimum plant growth.

### Construction Practices:

Soil organic matter and topsoil enhancement (incorporate into existing soil).

1. The log yard material delivered as a soil amendment needs to be compatible with the farming practices and property owners specifications.
2. Spread materials using a manure spreader, bulldozer, grader, or other suitable method.
3. Spread in a uniform lift and mix into the upper 6 to 18 inches of existing soil with rototiller, mold board plow, chisel plow, or other suitable equipment.
4. Allow a minimum of two weeks for soils to acclimate prior to planting. Time plantings to coincide with spring or fall rainfall depending on the desired vegetation. Planting immediately following log yard fines incorporation is possible but not recommended.
5. Evaluate the need for extra fertilizer to help decompose the woody debris using soil tests and observed crop responses. Add extra fertilizer nitrogen in increments during the course of the growing season to provide a moderate but steady supply of nitrogen for wood and bark decomposition. The first application of supplemental nitrogen could be added at the time of application to accelerate the decomposition process.

**Examples:**

1. Boise Cascade Corporation, Medford and White City, Oregon lumber mills have successfully applied log yard debris in four-inch lifts to farm land.
2. Fines are used at the retail level as a component in “3 in 1” mix or other retail soil blends.
3. Boise Cascade Corporation, LaGrande, Oregon. Soil amendments were applied in 1991, 1994 and 1996 under a solid waste permit.
4. Boise Cascade Corporation, Horseshoe Bend, Idaho. Soil amendment program began in 1994.

## **STOCKYARD BEDDING**

**Description:** Most stockyards use piles of earth or plant materials (straw, wood chips) to create dry areas for cattle. These mounds are intended to keep the livestock clean by elevating them above muddy bog areas often associated with stockyards during rain storms.

### **Materials:**

1. Piles made from sawdust, wood shavings, and log yard debris are in use. These materials are valued for their light-weight (for transportation), cleanliness, and pile stability.

### **Construction Practices:**

1. Mill yard debris used for animal bedding should be sized to remove oversize rock, and wood pieces. The material should not be placed adjacent to or in streams or marshlands.

### **Examples:**

1. Donaldson Ranch, Lewiston. Mill yard debris was used for cattle bedding.
2. Emmett Dairy Application, log yard debris used for cattle bedding. Oversized material was removed by machine and hand at the mill and dairy.

## **VISUAL AND SOUND BARRIERS**

**Description:** Wood and mill yard debris berms used as a sound barrier or to provide visual relief of the property through landscaping.

### **Materials:**

1. Wood and mill yard debris with a high percentage of soil may be used in development as privacy berms.
2. Some boiler ash may be mixed with the log yard materials. (See boiler ash section, page 5-2)

### **Construction Practices:**

1. Berms are generally constructed of a log yard debris base and may be covered with a suitable growth media (top soil, compost, or sized wood debris) to support vegetation such as trees, shrubs and other landscape plants or covered with other landscape materials.
2. A watering system may be needed to provide dust control and to establish good vegetative cover. The water system may consist of a sprinkler system for easy maintenance or by a water truck (higher maintenance).
3. Slopes of the berms should be stable and maintainable to prevent erosion.

### **Examples:**

1. Louisiana-Pacific, Chilco complex berm, south property line. 16 feet high, 10 feet across at top and 40 feet across at the base.
2. Idaho Forest Industries, Atlas mill on Seltice Way in Coeur d'Alene. Grass and trees watered with a sprinkler system.
3. DeArmond Mill on River Avenue in Coeur d'Alene has a landscaped berm along the Centennial Trail. Grass and trees are watered with a sprinkler system. See front cover of TGM.

## **WOOD AND MILL YARD DEBRIS LANDFILL**

**Applicability:** Wood and mill yard debris is defined in Idaho Code Section §39-172(3). Wood and mill yard debris landfills are not subject to Idaho Code Section 39-7401 et. seq., Idaho Solid Waste Facilities Act.

**Notice:** The applicant shall furnish the following information in a notice to the local District Health Department:

1. Owner's name.
2. Operator's name.
3. Physical location of the facility.
4. Facility mailing address.
5. Telephone number of the facility.
6. Type of solid waste management facility.

**Wood and Mill Yard Debris Landfill Criteria:** In accordance with the following outline, highlighting general requirements for establishing and operating a wood and mill yard debris disposal site in compliance with IDAPA 58.01.06, Solid Waste Management Rules, the owner/operator of a wood and mill yard debris landfill shall:

1. Be Prohibited From:
  - a. Disposal in a landfill of regulated waste from any business that provides health care, support to health care businesses, or medical diagnostic services that has not been decontaminated.
  - b. Speculative accumulation, unless otherwise approved by the Department in writing.
  - c. Disposal of radioactive waste except in a facility regulated pursuant to Section 39-4405(9), Idaho Code, and rules adopted thereunder or a facility regulated under the authority of The Atomic Energy Act of 1954, as amended.
2. Signs. Facilities open to the general public shall clearly post visible and legible signs at each entrance to the facility. The signs shall specify at a minimum the name of the facility, the hours of operation, the waste accepted at the facility and an emergency phone number.
2. Nuisance Control. The owner and operator shall control nuisances, including but not limited:
  - a. Disease or Discomfort. Operations at any facility shall not provide sustenance to rodents or insects that cause human disease or discomfort.
  - b. Vector. Vector control procedures shall prevent or control vectors that may cause health hazards or nuisances.
  - c. Odor. The facility shall be operated to control malodorous gases.
  - d. Litter. Effective measures shall be taken to minimize the loss of debris from the facility. Debris blown from or within the facility shall be collected and properly disposed to prevent objectionable accumulations.
4. Facility Access. Unauthorized vehicles and persons shall be prohibited access to the facility. A facility open to the public shall accept waste only when an attendant is on duty. The owner and operator shall maintain the fencing or other access controls for a period of ten (10) years after closure, or another timeframe approved in writing by the Department.
5. Bird Hazards to Aircraft. No facility may handle putrescible wastes in such a manner that may attract and increase the likelihood of bird/aircraft collisions. Facilities that are located within ten thousand (10,000) feet of any airport runway used by turbojet aircraft, or within five thousand (5,000) feet of any airport used by only piston-type aircraft shall operate the facility in such a manner that birds are not a hazard to aircraft.

6. **Open Burning and Fires.** Open burning is prohibited at facilities except as authorized by these rules and IDAPA 58.01.01, "Rules for the Control of Air Pollution in Idaho".
  - a) No open burning shall be conducted during an air pollution episode, declared in accordance with IDAPA 58.01.01, "Rules for the Control of Air Pollution in Idaho".
  - b) Open Burning is authorized only if it is infrequent and the materials are agricultural wastes, silviculture wastes, land clearing debris, diseased trees, or debris from emergency cleanup operations. Materials burned shall not include garbage, dead animals, asphalt, petroleum products, paints, tires or other rubber products, plastics, paper (other than that necessary to start the fire), cardboard, treated wood, construction debris, metal, pathogenic wastes, hazardous wastes, or any other substance (other than natural vegetation) that when burned releases toxic emissions, dense smoke or strong odors.
  - c) Open burning shall be conducted pursuant to conditions set forth by the Department or local fire authority. The owner and operator of the facility shall contact the Department and the local fire authority prior to conducting open burning to report its nature and location.
7. **Storm Water Run-On/Run-Off Controls.** Implement sufficient storm water management provisions, which may incorporate a NPDES storm water pollution prevention plan, to prevent contamination of surface or ground water and prevent the spread and impact of contamination beyond the boundary of the facility.
8. **Documentation.** Maintain on site documentation, such as a daily log of the quantity and type of waste received.

**NOTE:** Except for boiler ash as defined above, codisposal of other solid waste into a wood and mill yard debris landfill may result in the landfill no longer qualifying as a wood and mill yard debris landfill. Wood and mill yard debris landfills are often used to codispose of ash generated from burning wood for energy recovery. Codisposal of wood and mill yard debris with ash is not expected to increase risks to human health or environmental associated with a wood and mill yard debris landfill provided: (a.) the annual ash disposal does not exceed six (6) percent of the total annual disposal volume; (b.) the ash is distributed throughout the landfill; and (c.) the ash results primarily from burning wood fuel.

## GLOSSARY

**Berm:** A lateral extension of dirt, sand, rock, or other fill material used for construction, landscaping, storage or disposal of the fill material. (See Visual & Sound Barrier alternative).

**Boiler ash:** Residue from wood fired boilers.

**Cull logs:** Damaged logs and end pieces not suitable for processing at the mill.

**Debris fill:** An area designated for the disposal of wood or mill yard debris.

**Dunnage:** Any material used for packing and crating for freight. Low-grade wood materials used to stabilize for shipping and transport. Typically used once and discarded.

**Geotextile liner:** Any permeable textile used with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of a human-made project, structure, or system. (A Design Primer: Geotextiles and Related Materials, page A-2).

**Hogged (hog) fuel:** Woody materials or bark which has been sent through a wood hog for ultimate use as fuel.

**Hogging:** The process of reducing woody materials in size and volume, usually into wood chips below four inches in size.

**Leachate:** A liquid that has passed through or emerged from solid waste and contains soluble, suspended or miscible materials removed from such waste (IC. 39-7403(27)).

**Liner:** A barrier of soil or synthetic material to prevent leachate from passing through a landfill.

**Log decks:** An ordered pile of logs so stacked as to facilitate ease of storage and use.

**Log yard:** A facility that receives, sorts, stores, and/or processes logs.

**Log yard debris:** See wood and mill yard debris.

**Mill yard:** See log yard.

**Non-municipal solid waste:** That portion of the solid waste stream that does not originate in a family dwelling, such as demolition waste, logyard waste, and landscaping waste.

**Primary wood products facility:** A facility which converts logs into primary wood products, such as lumber, veneer, plywood, and pulp chips.

**Secondary wood products facility:** A facility which converts wood products or by-products into useful products, such as, particleboard, paper, pellet fuel, and hardboard.

**Solid Waste:** Garbage, refuse, radionuclides, and other discarded solid waste materials including solid waste materials resulting from industrial, commercial, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial wastewater effluents, dissolved materials in irrigation return flows or other common water pollutants. Idaho Code §39-103(11).

**Sorting yard:** A specialized logyard or portion of logyard where logs are separated into different classifications (such as, length, diameter, quality, and wood species) prior to processing and/or shipping.

**Spontaneous combustion:** Combustion of material initiated by chemical or biological action produced within the materials.

**Storage:** The accumulation of a material or product with the intent for use, sale, or disposal of the material at a later date.

**Storm water:** Precipitation.

**Tannins:** Water soluble, colored, polyphenolic chemicals originating from wood, bark, and other plant-derived materials; any of various substances of plant origin used in tanning and dyeing, in inks, and as astringents.

**Wetlands:** The Corps of Engineers (FR 1982) and the EPA (FR 1980) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

**Wood byproducts (wood residuals):** Wood products, such as chips, sawdust, and hogged fuel, which are incidentally produced by a primary wood product facility.

**Wood mulch:** Sized woody material suitable as a soil additive.

**Wood waste:** Solid waste consisting of wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, handling and storage of raw materials and tree stumps. This ... does not include wood pieces or particles containing chemical preservatives, such as, creosote, pentachlorophenol, or copperchrome-arsenate. Idaho Code §39-7403(57).

**Wood yard:** See log yard.

**Wood and mill yard debris:** Solid wood, bark, or wood fiber generated from the process of manufacturing wood products that may include components of soil, rock, or moisture and for which the use, management, storage, or final disposition is approved pursuant to this act. Idaho Code §39-172(3).

# IDAHO CODE

## WOOD AND MILL YARD DEBRIS ACT

Idaho Code §39-171. Legislative Findings And Purpose. The Legislature of the state of Idaho finds that:

- (1) Wood and mill yard debris is a byproduct of wood processing and manufacturing; and
- (2) If properly managed, wood and mill yard debris can be put to uses that have economic and environmental benefits; and
- (3) There is a need for guidance about how to manage, store, use or dispose of wood and mill yard debris so that nuisance and adverse environmental impacts are minimized; and
- (4) This guidance will enable the department and local units of government to more effectively regulate the use or disposal of wood and mill yard debris.

The purpose of this act is to provide guidance for the sound use, storage, management and disposal of wood and mill yard debris by requiring the director of the Department of Health and Welfare to appoint a committee to study the issues and to gather and disseminate information to persons and entities that deal with wood and mill yard debris.

Idaho Code §39-172. Definitions. For the purposes of this act:

- (1) “Committee” means the wood and mill yard debris committee.
- (2) “Director” means the director of the Idaho department of health and welfare.
- (3) “Wood or mill yard debris” means solid wood, bark, or wood fiber generated from the process of manufacturing wood products that may include components of soil, rock, or moisture and for which the use, management, storage, or final disposition is approved pursuant to this act.

Idaho Code §39-173. Committee--Members--Terms. The director shall, in cooperation with the appropriate public health districts created pursuant to Chapter 4, Title 39, Idaho Code, appoint a committee to develop guidance on the use, storage, management, and disposal of mill yard or wood debris. This committee shall consist of seven (7) individuals and shall include:

- (1) One (1) representative of the division of environmental quality, who will provide administrative and other support to the committee.
- (2) Two (2) representatives of the public health districts which have mill yard or wood debris within their districts.

- (3) Two (2) representatives from industries generating wood or mill yard debris.
- (4) Two (2) members with demonstrated technical knowledge important to the work of the committee.

Committee members shall be appointed to serve three (3) year terms. No member may serve more than two (2) full terms. Members serve at the pleasure of the director.

Members of the committee shall serve without compensation pursuant to section §59-509(a), Idaho Code.

Idaho Code §39-174. COMMITTEE DUTIES -- MEETINGS. The committee's duties shall include:

- (1) Developing a manual providing guidance for the use, storage, management and disposal of wood or mill yard debris to prevent public nuisances and minimize or prevent harmful environmental impacts. Guidance provided by the manual may be incorporated or adopted by reference in the rules of the department or other appropriate state agencies.
- (2) Considering and developing specific solutions to unforeseen wood or mill yard debris use, storage, management or disposal as needed.
- (3) Developing and sharing knowledge related to the use, storage, management and disposal of wood or mill yard debris including ways to constructively use or reclaim the debris.
- (4) Making recommendations for any necessary permits, rules or legislation related to the use, storage, management or disposal of wood or mill yard debris.

The committee shall meet at least two (2) times a year at a time and place most convenient to the majority of the members.

## **LITERATURE REVIEW/ANNOTATED BIBLIOGRAPHY**

Summary of significant literature publications and synopsis of other timber producing state's rules.

RESERVED: Under development

## APPENDIX A

### CONTACT LIST - DEQ AND DISTRICT HEALTH DEPARTMENTS

<p>Coeur d'Alene Regional Office-DEQ                  2110 Ironwood Parkway                  Coeur d'Alene, ID 83814                  208-769-1422</p>	<p>Panhandle District Health Department                  2195 Ironwood Court                  Coeur d'Alene, ID 83814                  208-667-9513</p>
<p>Lewiston Regional Office-DEQ                  1118 F Street                  Lewiston, ID 83501                  208-799-4370</p>	<p>North Central District Health Department                  215 10th Street                  Lewiston, ID 83501                  208-799-0353</p>
<p>Boise Regional Office-DEQ                  1445 N. Hilton                  Boise, ID 83706                  208-373-0550</p>	<p>Southwest District Health Department                  920 Main Street                  Caldwell, ID 83605                  208-455-5400</p>
	<p>Central District Health Department                  707 N. Armstrong Place                  Boise, ID 83704                  208-327-7499</p>
<p>Twin Falls Regional Office-DEQ                  601 Pole Line Road Suite 2                  Twin Falls, ID 83301                  208-736-2190</p>	<p>South Central District Health Department                  1020 Washington                  Twin Falls, ID 83303                  208-734-5900</p>
<p>Pocatello Regional Office-DEQ                  -444 Hospital Way, #300                  Pocatello, ID 832041                  208-236-6160</p>	<p>Southeastern District Health Department                  1901 Alvin Ricken Drive                  Pocatello, ID 83201                  208-233-9080</p>
<p>Idaho Falls Regional Office-DEQ                  900 Skyline Suite B                  Idaho Falls, ID 83402                  208-528-2650</p>	<p>District 7 Health Department                  254 E Street                  Idaho Falls, ID 83402                  208-523-5382</p>
<p>State Office-DEQ                  1410 N. Hilton Place                  Boise, ID 83706                  209-373-0416</p>	