Standing Operating Procedure (SOP) for
Safe Use of Chipper

1. PURPOSE. The purpose of this SOP is to outline steps to be followed for the safe use of chippers in the field.

2. SCOPE. Includes procedures for field operations with chippers.

3. RESPONSIBILITIES.
   
a. Natural Resource Supervisors: Review procedures with Natural Resource Staff to ensure understanding and compliance during safety briefings. Ensure staff has all appropriate training.

b. Natural Resource Staff: Use chipper in accordance with SOP.

c. Ensure that risk assessment and safety plans are completed incorporating procedures.

d. Failure to comply with this SOP may result in disciplinary action.

4. PROCEDURES. Read all manufacturer’s instructions carefully before operating chipper. The following safety precautions should be observed by all users:

   a. General Considerations.

      (1) Do not operate chipper when fatigued or distracted. Using a chipper requires the full attention of the operator and any other personnel in the nearby area.

      (2) Be aware of all other personnel in area whenever chipper in use.

   b. Product information

      (1) Model: 65XP Brush Bandit.

      (2) Engine: Caterpillar, CAT T3, model C1.5, diesel

      (3) 1 year warranty, beginning 28 Jan 2009

   c. Training.

      (1) Watch safety DVD provided by Bandit.
(2) Read Bandit Accident Avoidance Booklet and Safety Procedures section of operation manual.

(3) Read and sign this SOP.

(4) Consult Field Use Checklist before use; keep copy with machine for reference.

**Bandit Checklist: Field Use Operation**

**BEFORE YOU START:**
- Check engine fluid, hydraulic fluid, and fuel
- Ensure silver jack is up, no pressure
- Aim the debris output
- Check bearings, belts, and grease points
- Block tires and tongue for stability

**SAFETY:**
- Wear PPE: earplugs, safety glasses, hardhat, gloves, dust mask
- If item becomes caught, use reverse bar or pull cords to clear.
- Do not stick body parts into infeed tray
- Always be aware of power of machine

**STARTING:**
- Turn to preheat, when light turns on, engine is preheated
- Turn on to ‘start’
- Pull throttle lever up slowly, latch in place

**USE:**
- Feed debris into infeed tray, let the autofeed do the work
- Keep clear of branches as debris is pulled in
- Use the pusher paddle to feed small debris or caught debris
- Use reverse bar to clear caught pieces
- Do not run until fuel is dry!!

**STOPPING:**
- Push throttle lever down slowly, machine will vibrate
- Turn key to ‘off’

**AFTER YOU STOP:**
- Check for caught debris in autofeed and blades; open case with silver jack
- Grease bearings, all grease points (10)

(1) Prolonged exposure to excessive noise is fatiguing and could lead to impaired hearing. The use of proper ear protection can reduce this potential hazard.

d. Protective equipment required for chipper use.
Required PPE

- This applies to NRS working directly with chipper, i.e., feeding material into the hopper.
- Snug fitting clothing. NO loose fabric, jewelry, watches, hair, or other items which could be caught in chipper or debris.
- Snug-fit gloves
- Hard hat
- Hearing protection
- Safety glasses
- Safety footwear

Suggested PPE

- Hearing protection should be worn when working around chippers.

e. Fuel considerations.

(1) Never let the engine run dry; refill the engine before fuel runs out.

(2) Don’t store fuel for long periods of time; moisture can get into the fuel and cause operational problems.

(3) Re-fuel only where there is good ventilation.

(4) Transport fuel in approved metal cans and MSR bottles.

(5) The chipper runs on diesel fuel. Diesel fuel is considered a hazardous material. PPE (gloves, eye protection) should be worn when handling diesel fuel. Biodiesel may be used; this option will be investigated as biodiesel is much less hazardous than regular diesel.

(6) Report any fuel spills immediately by calling the DPW Hazardous Waste Branch (656-1111).

f. Operation guidelines.

(1) Do not allow other persons to be near the chipper, particularly the infeed tray and outflow tray when chipper is in use. Do not, however, operate the chipper unless another coworker is present to respond to an incident.

(2) Do not begin operations until all personnel working on project have been briefed on a work plan, are clear on work roles, and understand basic safety.

(3) Ensure chipper is secured and will not roll or move.

(4) Keep a fire extinguisher with the chipper whenever it is in use.

(5) Do not operate a damaged, poorly functioning or out-of-adjustment chipper.
(6) Perform a pre-operation and after-operation check of the chipper; follow the Field Use Operation Checklist. Ensure that all warning stickers are in place and visible. Ensure that no tools or other foreign objects are in the chipper (especially the infeed tray) or are unsecured.

(7) Operators must be within reach of feed controls and shut-off devices whenever the chipper is in use.

(8) Direct the discharge chute away from personnel, areas of activity, and ideally downwind.

(9) Do not place one’s body on the chipper in any way when it is in use.

(10) NEVER reach into the infeed hopper area of the chipper. Feedwheels are built to pull in large cumbersome trees; they do NOT let go. Use the wooden push paddle to push debris into the infeed hopper. Use the reverse bar to clear jammed items. There is a Last Chance Stop cable; do not assume that it will save you; you should never be within 3 ft of the Last Chance Stop cable.

(11) Do not feed the following into the hopper: vines, vine-like material, wires, stones, nails, metal, or materials which contain metal objects.

(12) Stand to the side of the infeed hopper when feeding material to the chipper. Be aware that material can rotate and move rapidly once it is being pulled in by the feedwheels. Back away from the chipper to ensure that you are not hit by branches. Keep a clear escape path. Always feed the larger end of the tree/brush into the hopper first.

(13) Keep engine RPMS at full throttle for all material being chipped.

g. Maintenance.

(1) Follow maintenance directions outlined in the manufacturer’s operation and parts manual. This maintenance shall be conducted by approved staff. Only staff familiar with machine operation, machinery maintenance, and briefed by Allied Machinery will be approved.

(a) Always ensure that the engine is off, the disc has come to a full stop, the disc lock pin has been installed, the battery is disconnected, and the key is removed from the ignition before starting any maintenance.

(b) When resuming operations, ensure that the chipper hood is closed and locked with the hood pin, the disc lock pin has been removed, the battery is connected, and all tools, etc have been removed.
(2) The chipper will be taken to a suitable repair shop for any complex maintenance operations. Also, any repairs or troubleshooting required will be conducted by a qualified mechanic. If needed, the vendor can send a mechanic into the field.

(3) Basic maintenance tasks which can be done by staff are outlined in the Bandit Checklist: Maintenance inset below.

<table>
<thead>
<tr>
<th>Bandit Checklist: Maintenance</th>
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<tbody>
<tr>
<td><strong>BEARINGS</strong></td>
</tr>
<tr>
<td>• Very expensive to replace, better to maintain</td>
</tr>
<tr>
<td>• Grease daily!</td>
</tr>
<tr>
<td><strong>OIL POINTS</strong></td>
</tr>
<tr>
<td>• 10 oil points</td>
</tr>
<tr>
<td>• Grease daily, after every use</td>
</tr>
<tr>
<td><strong>BLADES</strong></td>
</tr>
<tr>
<td>• 2 blades</td>
</tr>
<tr>
<td>• Keep sharp, otherwise strains entire machine. Flip blades when machine is straining, chipping poorly; check chips to see if blades sharp</td>
</tr>
<tr>
<td>• When adjust blades (flip), also adjust gap and anvil</td>
</tr>
<tr>
<td><strong>FUEL</strong></td>
</tr>
<tr>
<td>• Don’t store fuel for long periods, moisture may get in</td>
</tr>
<tr>
<td>• Keep cans clean</td>
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<tr>
<td>• No additives needed</td>
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<tr>
<td><strong>BELT</strong></td>
</tr>
<tr>
<td>• Check tension and tighten as needed</td>
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<tr>
<td><strong>AIR FILTER</strong></td>
</tr>
<tr>
<td>• Take off and clean regularly</td>
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<tr>
<td><strong>REGULAR MAINTENANCE</strong></td>
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<tr>
<td>• Follow guidelines in manual for regularly scheduled maintenance</td>
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<tr>
<td>• Hour counter on chipper, indicates when to conduct maintenance</td>
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<tr>
<td><strong>SERVICE</strong></td>
</tr>
<tr>
<td>• Call Allied Machinery or similar repair shop</td>
</tr>
<tr>
<td>• Be prepared with machine specs, part numbers, serial numbers</td>
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h. Transport.

(1) All transportation procedures outlined by the manufacturer in the operation manual shall be followed. These include:

(a) Chipper is turned off, debris removed, feedwheel lowered, all controls turned to
“off,” infeed pan to hopper folded and latched, tools and movable parts secured and nothing dragging on ground.

(b) Ensure that the hitch and coupling sizes match. Secure and lock hitch. Lift foot pad jack and secure. Cross safety chains under hitch, leaving slack, and latch to hitch. Plug in electrical cord and check to make sure lights work. Check tire pressure.

(2) The towing vehicle must be sized to handle the hitch weight, towing weight, and braking weight required by the chipper.

(3) The towing vehicle shall be driven responsibly, following all speed regulations for equipment towing. Drivers will be reviewed to ensure that they are competent in driving a trailer, including reversing the trailer.

(4) The following additional considerations shall be taken into account when the chipper is flown into remote work sites.

(a) Only experienced, helicopter-use trained staff will sling the chipper.

(b) The weight of the chipper is approximately 2800 lbs. Only helicopters rated to carry this amount of weight will be used in sling operations. Helicopters with this capability are the Huey or Blackhawk. Pilots will be briefed on the weight of the chipper.

(c) The chipper shall be rigged with at least 3 straps to create a stable flying and landing platform.

(d) All movable parts will be secured or removed prior to flight. Parts that are removed will be flown in an approved helicopter bag or sling.

(e) Fuel will be removed prior to flight.