

DOT

use of

Rodeo

Is it Environmentally Safe?

An environmental impact statement completed by the state of Washington, which uses 25 chemical compounds as part of its brush control program, found that glyphosate, the most-studied weed control compound in the world, is not considered to be a risk to wildlife as a result of its use for roadside vegetation management.

The same study showed that glyphosate biodegrades in the terrestrial environment into carbon dioxide and water. The risks to workers and the public associated with exposure to the compound "are below levels of concern for all pathways evaluated."

Are there Alternatives?

Alaska's Department of Transportation and Public Facilities evaluated all possible options for removing brush and found that chemical sprays must be a part of any effective brush-control program.

Mechanical methods of brush control — while not as effective as chemicals, will still be used on more than 99 percent of the road right of way. In the spray area, mechanical methods are far more costly than use of RODEO and do not eliminate the problem alder brush.

Is it Effective?

A test section of 4- to 8-foot-tall alder brush in Petersburg and Klawock was sprayed with RODEO 2 1/2 years ago. The alders were just starting to come back after two years, while other vegetation such as grass and flowers has flourished.

In an adjacent section, where brush was cut mechanically, the alder has grown back to the level it was previously, and needs to be cut back again.

No effective brush control program can rely solely on mechanical means. DOT/PF is committed to environmental responsibility and will continue to look for other ways to get its job done without using chemicals. Meanwhile, all available information shows that RODEO can be applied safely, without harm to people, animals or the environment.

For More Information...

**The Department of Transportation
and Public Facilities
Southeast Region**

**Joe Pape
465-1786**

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Southeast Alaska's

BRUSH CONTROL

Why is Brush a Problem?

The Department of Transportation and Public Facilities has explored a variety of alternatives for controlling brush along Southeast Alaska roadways. Brush, primarily alder, causes a number of problems on the roads, including:

Safety hazards

Brush reduces visibility can cause accidents.

Damage to the roadway

Roots grow underneath the road and ruin pavement. (Brush under guardrails retains winter sand, causing a berm to form which interferes with road surface drainage. This harms the pavement and is a safety hazard.)

Aesthetics

Uncontrolled brush makes it difficult or impossible to see the scenic wonders that make Alaska a world-class tourist destination.

How Do You Control Brush?

Control of nuisance vegetation is a critical part of routine highway maintenance. The department has studied the alternatives and found that a comprehensive vegetation management which in-

cludes some spraying is the only reasonable alternative for keeping brush under control. "We have tried everything we can think of besides chemicals to control brush, and just can't keep up with it," said Jon Scribner, Southeast regional director for the department.

The department proposes to use RODEO, an environmentally sensitive compound, on less than 1 percent of Southeast Alaska's roadside right of way. The amount of the compound to be used amounts to a single drop per square foot on this limited amount of area.



DOT/PF is applying for a permit from the Department of Environmental Conservation to apply RODEO along less than 90 miles of guardrail section on 1,100 miles of state roadside in Southeast Alaska. A one-time application over a three-foot-wide strip along each side of the guardrail will occur

whenever climatic conditions are appropriate and personnel are available between Aug. 1 and Oct. 31, 1994. Based on earlier test results from Petersburg and Klawock, RODEO would need to be applied approximately once every three years.

Is Rodeo Toxic to Humans?

Today's chemical compounds are much safer than the chemicals of the past. Tests in Petersburg and Klawock have shown that RODEO was barely detected in soil samples taken 55 days after application. RODEO'S active ingredient, glyphosate, is rated as practically non-toxic to mammals and birds.

The toxicology of glyphosate has been studied for more than 20 years by a wide range of scientific and health organizations from around the world. The health and safety data base for glyphosate is the largest in the world for vegetation management products.

The consensus of all the regulatory agencies and health organizations that have reviewed it is that glyphosate presents insignificant risk to humans or animals.

Short-term, large-dose testing shows glyphosate to be about four times less toxic than aspirin, and more than 25 times less toxic than caffeine.

Answers to your Questions about Rodeo

Here is a list of the most commonly asked questions about DOT/PF's Brush Control Program for Southeast Alaska:

Question: Why is DOT/PF proposing to spray along the guardrails?

Answer: The department has studied every alternative method of controlling problem brush, and no single method has been found to be as effective or efficient as using an environmentally sensitive compound such as RODEO. Spraying, part of a comprehensive vegetation management program, is proposed for less than 1 percent of the roadside right of way in Southeast Alaska, while other methods will continue to be used for more than 99 percent.

Question: The department withdrew its applications to spray after public hearings last year. What's changed?

Answer: DOT/PF withdrew the applications because the public raised many important questions for which adequate answers were not available. The department has spent a great deal of time and effort finding answers to the questions and exploring the alternative brush control methods suggested. Costs, health effects and environmental effects also have been examined extensively, with the conclusion that the proposed amount and method of application are effective, cost far less and have negligible effects.

Question: Were independent studies performed that prove that RODEO won't have negative effects? Who performed these studies and what did they show?

Answer: A wide range of independent scientists and health organizations worldwide have studied the toxicological effects of glyphosate, the active ingredient in RODEO, for more than 20 years. The consensus is that this material presents insignificant risks to humans or animals.

Question: Will the spraying contaminate water?

Answer: RODEO adheres to the soil rather than leaching out into adjacent areas. Tests on sprayed sections showed no trace of RODEO 12 feet from the guardrail. Spraying will be done a safe distance from any creeks or other water bodies. RODEO is one of the few substances approved by the Environmental Protection Agency for aquatic weed control, so its effect on waterways would be minimal even in the unlikely event any traces reached water.

Question: What about recreational activities such as fishing, berrypicking and hunting? Will there be any danger from the spraying?

Answer: Risk analyses by the Washington State Environmental Impact Statement on Roadside Vegetation Management indicate the maximum risk of adverse effects associated with these activities from the plan to use RODEO is "negligible," or less than the risk associated with one transcontinental flight per year. The acute short-term, large dose testing shows glyphosate is four times less toxic than aspirin and less than 25 times less toxic than caffeine. A person would have to eat at least 450 pounds of wild berries sprayed with Rodeo during a single day to show any adverse effects from the spray.

Question: Is RODEO harmful to wildlife?

Answer: No. If eaten by wildlife, the particles will pass through the body with no effect. The Washington state environmental impact statement concluded that glyphosate, the active ingredient in RODEO, is not considered to be a risk to wildlife as a result of roadside vegetation management. A 200-gram quail would have to eat approximately 53 times its normal daily intake of glyphosate-treated grain in a matter of minutes in order to ingest a lethal dose of glyphosate. This is assuming that glyphosate was treated at the maxi-

mum application rate. In all the years of glyphosate use for roadside vegetation management, there has never been a documented case of injury to wildlife due to their feeding on treated vegetation.

Question: How will RODEO be applied?

Answer: Trained, licensed personnel will use backpack hand sprayers to apply a small quantity of solution to the area within three feet on each side of the sections of guardrail. Spraying will be done only when weather conditions permit, so every application will be a completely controlled process.

Question: How long will the actual spraying take?

Answer: We estimate that only a few days of spraying in each community, done when climatic conditions are appropriate between Aug. 1 and Oct. 31, will be needed.

Question: How often will be brush have to be sprayed?

Answer: Tests in Petersburg and Klawock indicate that spraying alders once every three years will keep growth of problem brush under control. On a test section sprayed two years ago, alder is just starting to grow back, while other

vegetation such as grass and flowers is flourishing. Alder cut mechanically at the same time is now taller than it was when it was cut.

Question: How will the RODEO be disposed of after spraying?

Answer: Empty containers will be triple rinsed with water and the empty containers will be punctured and crushed and disposed of in an approved city or state landfill.

Question: Doesn't glyphosate break down into formaldehyde, which is a known carcinogen?

Answer: No. Glyphosate biodegrades into carbon dioxide (CO₂) and water. The federal Environmental Protection Agency recently reclassified glyphosate from the "no evidence of carcinogenicity in humans" to "evidence of non-carcinogenicity in humans," its safest classification group. This decision was made based on evidence from scientific studies.

Question: What about the "R-11," the "surfactant" used in the herbicide mix?

Answer: R-11 has been used for years with RODEO as a wetting agent to allow the herbicide to penetrate the waxy surfaces of the vegetation. R-11 meets the safety stan-

dards for exposure to aquatic species with considerable safety margins, even if applied to the surface of still, shallow water.

Question: Why is RODEO only used around the guardrail?

Answer: Problem brush is the most difficult and expensive to control near and around the guardrail. It's hazardous work, both to employees and the public, to do the work by hand. Other areas farther away from the guardrail, can be done by mechanical methods.

Question: What warnings of spraying will be given?

Answer: Signs will be posted the day the spraying begins to advise the public of treated guardrail sections.

Question: What assurances can the department give the public that this spraying is safe?

Answer: The best scientific information available shows that the type of spraying proposed in Southeast Alaska will not harm humans or wildlife. Every precaution will be taken, and all evidence shows that this extremely conservative approach is safe.

**If you have questions about RODEO, or the state's
Brush Control Program for Southeast Alaska,
please call Joe Pape at 465-1786.**

DOT&PF COMMENTS
ON
"Information Sheet on RODEO Spraying - February 7, 1994"
BY
LYNN CANAL CONSERVATION
HAINES

→ Pages 7 & 8

February 16, 1994

1. No comment.
2. Also, RODEO is approved by the Environmental Protection Agency (EPA) for use in fresh water and estuarine water environments to control undesired vegetation.
3.
 - a. Glyphosate (G) biodegrades completely to carbon dioxide and water in a relatively short time depending on the amount of bacteria in soil or water. The primary and only significant known metabolite of G in the decomposition process is AMPA (amino methyl phosphoric acid). Toxicity, subchronic and other studies show AMPA is significantly less toxic than G, and exposure to acutely toxic levels in soil, water or agricultural products is virtually impossible. For example, the lethal dose for 50 percent of test animals is 192 mg/kg for caffeine; for AMPA it is 400 mg/kg.
 - b. We are not aware of any studies which indicate formaldehyde is a byproduct of or is associated in any way with G.
 - c. Numerous studies have shown that G binds tightly to soil with little potential to move into groundwater. It is classified as an immobile compound in the soil. Information available to us indicates G has never been found in groundwater in over 18 years of wide use. We would like to know about the studies referred to in the information sheet which indicate G has been found in groundwater in Texas and Virginia, and if it has any relevance to the proposed treatment program.
4. NNG (n-nitro-goglyphosate) has similar characteristics to G, so it is theoretically possible, but unlikely, to find minute quantities of NNG in commercially available G. NNG cannot easily be produced without high temperatures and pressure used in laboratory conditions. In thousands of crop residue tests NNG has only been found a few times, and then in amounts less than 0.05 parts per million. Studies of NNG show it is not onogenic, teratogenic, or mutagenic. It has been found to be unstable and degrade rapidly and completely in the environment. There is no evidence that it bioaccumulates or that it causes birth defects or cancer. Risk assessments for NNG at the levels found show that concerns for this material are not reasonable.
5. G strongly adsorbs onto soil particles, but that has nothing to do with how long it "persists" in the environment. G is degraded by bacteria in the soil. While the studies quoted in the information sheet show half-lives up to 574 days, most studies show the half-life of G in soil is less than 120 days. That is why G is not considered to be a persistent substance in the environment. Soil

5. (continued)

samples analyzed for G and AMPA after RODEO was applied in Petersburg and Klawock were consistent with these later studies.

6. a. G applied directly to streams and/or broadcast over wide areas such as forests may be "detected" in small amounts downstream or in run-off. However, G quickly binds to soil particles on land or in the water and begins to biodegrade quickly. Once bound up it is no longer able to damage plants. Even in aerial spraying applications over whole forests we are not aware of any studies which show toxic effects on nontarget habitats, birds, insects, shrimp, crabs, fish or small mammals. In the proposed application, these effects are not plausible at best.
- b. Because G is a broad spectrum, non-selective weed controller, it is understandable it would kill any endangered plant species it is applied to directly. However, it is not plausible to expect any endangered plant or animal species within the proposed treatment areas along Southeast Alaska's roadsides. These areas contained virtually no plant or animal life when the roadsides were originally constructed or reconstructed. The implication that G may threaten endangered species and animals is out of context in EPA's report.
7. a. It is inconceivable that the proposed treatment along guardrail sections of roadways would result in increased stream temperatures and adversely affect fish. Even so the vegetation growing in the proposed treatment areas has been cut down periodically for safety and other reasons.
- b. As noted earlier, G is used effectively in aquatic environments to control undesired aquatic plants. For example, Ducks Unlimited recently used over 400 gallons of RODEO to control undesired vegetation in a water body to enhance its use by wildlife. However, since the proposed application is along roadsides and not on water bodies, it is not plausible to expect adverse effects on plants or algae in adjacent water bodies.
- c. Many studies, including test results in Petersburg and Klawock, indicate G biodegrades fairly rapidly in the environment. Also, since the treatment area is along roadsides and G binds so readily and tightly to soil particles, it is not reasonable to expect adverse effects on fish stocks. We would certainly be interested in any specific studies which might indicate otherwise.
8. The group most at risk to G exposure is clearly the applicators themselves. Even for this group, risk analyses developed in the Environmental Impact Statement (EIS) for the State of Washington's Roadside Vegetation Management Program show the risks are negligible, or less than the risk associated with one transcontinental flight per year.

Also, based on the extensive G data base available, a person would have to eat at least 450 pounds of contaminated wild berries in one day to reach the lowest observable effect level anticipated for human exposure. We would be interested in specific references which the information sheet uses to support the statistics it presents as well as the definition of the term "accepted dose."

8. (continued)

These data, if correctly presented, suggest a much greater risk than the Washington State EIS or any other data we have reviewed.

9. The Oregon Coast Range Study was an aerial spray over a whole forest area that is in no way comparable to the site-specific hand-spray application along roadsides proposed by the department. It would be expected to find G in the viscera of forest animals eating material containing G. The tests include the viscera as well as the material containing G which is in the viscera. A quick look at these studies further shows that the concentration of G found in the viscera follows the concentration in the food supply, indicating it passes through and does not accumulate in the animals.
10. Because G is one of the most widely used herbicides, it is not surprising that it would rank high on a list of reported illnesses due to exposure compared with other pesticides. We understand that of these reports, only a few resulted in the most minor negative effects; and that they could have been readily prevented by common sense and following the recommended application procedures.

The State of Washington reported most of its maintenance employee deaths are the result of vehicular impacts; that vegetation management equipment is occasionally rear-ended by other motor vehicles; and that they have had no reported instances related to pesticides which required hospitalization.

11. We understand a person would have to drink more than one quart of ROUNDUP to observe any of these kinds of reported internal effects. Similar effects would be expected from drinking coffee dosed with soap. Based on the experience of Washington State's extensive herbicide program, the risks of adverse effects from accidental exposure in the department's proposed program seem very remote.
12. The statements regarding toxic effects misrepresents the applicable laboratory studies and implies adverse effects from the department's proposed program that border on irresponsibility. In fact, these same toxicity studies have been the basis for scientists to conclude G is practically non-toxic to mammals; and they are substantially the information EPA reviewed to reclassify G to its most safe group, E. Risk analyses developed by the Washington State EIS based on these studies show the risk of adverse effect to applicators and the public from several different scenarios of use, contact and ingestion to be negligible.
13. The information quoted here is outdated and inaccurate. In fact, the EPA recently reclassified G as Group E (evidence of non-carcinogenicity in humans) based upon a thorough review of the extensive scientific data base.
14. a. R-11 is not regulated by EPA because it is not a pesticide. In that sense, it is no different than virtually any other soap, shampoo or shaving lotion-type product available on the market to the public. Data contained in the Washington State EIS indicate R-11 is practically non-toxic to humans and wildlife. Based on this information, they determined the risks of their proposed amounts and methods of application of R-11 in combination with G to their workers and the public to be negligible. We

14. a (continued)

understand in 20 years of using RODEO and surfactants (including R-11), there has never been a documented case showing injury to fish.

- b. The statements about the surfactants used in Roundup and the surfactant Ortho X-77 are not relevant because they are not being used in the department's proposal.
- c. There is a significant body of toxicological information available on R-11 which has been used by the State of Washington and others to conclude the proposed application would present a negligible risk to animals or the environment. The inert ingredient in RODEO is water.
- d. R-11 has been used extensively with RODEO for years. The R-11 helps RODEO stick to the leaves of vegetation, so the RODEO can be absorbed into the plant and kill it. This is the only "synergistic" effect known for the combination of these two agents.

15. State law clearly does not prevent pesticides from being applied to state waters, to within 100 feet of water bodies or wetlands, or when wind speed exceed 6 miles per hour (mph). The manufacturer's directions for use of RODEO say basically not to apply it within one-half mile of a potable water supply. The department plans to adhere to this instruction and does not believe it will affect a significant amount of the proposed application in the Haines area. Very few potable water intakes are known to exist in the surface waters adjacent to the proposed treatment areas. The manufacturer's directions also indicate that rainfall within six hours after application of RODEO may reduce its effectiveness. The department fully expects to be able to meet this criterion in order to achieve maximum effectiveness of the product.

RODEO is proposed to be applied to brush and weeds in a very site-specific area around guardrail sections along the roadside. No applications are proposed directly to any water body and it is not plausible to anticipate concentrations from the proposed application in water bodies high enough known to cause adverse effects on fish, humans or other wildlife. A considerable data base shows that G does not migrate significantly through the environment, that it biodegrades fairly rapidly, and that it does not leave residual or concentrating effects.

16. The department's primary objective in roadside vegetation management is to control the brush which causes safety problems, roadway damage and obscures visibility along the roadway.

Exclusive use of mechanical methods for the last fifteen years has not been able to effectively prevent these problems. Extensive efforts during the past two years have led us to conclude this objective cannot be achieved efficiently and effectively without using a small amount of chemical in addition to other methods.

In addition to being the only way we know of to achieve the objective, our analysis conclusively shows chemical treatment to cost less than other

16. *(continued)*

methods. This is true even though the proposed method is to use a relatively slow backpack site-specific hand-spraying system.

The indirect costs discussed in the information sheet are insignificant compared to the direct cost of treatment, and together do not approach the cost of other methods.

17. Analyses in the Washington State EIS and considerable other scientific data available on RODEO and its effects indicate there is no need to "quarantine" sprayed areas using the proposed amount and method of treatment.

However, signs will be posted to inform the public about the guardrail sections that have been treated.

Based on the data available, it is not plausible to suggest the proposed application might result in concentrations in water, vegetation, fruits, fish or wildlife high enough known to cause adverse effects on fish, other wildlife or humans.

18. These statements are simply common sense or prudent practices mentioned in the directions for using RODEO; are incorrect in some cases; or not relevant to the proposed treatment program.

- 1) The department is committed to treating the proposed area when weather conditions are appropriate in order to prevent the need for repeat application.
- 2) In 1991, RODEO was the only herbicide approved by the EPA for use in and around estuarine environments based on their review of a number of salmonoid and shellfish tolerance studies.
- 3) The Department of Fish and Game is directly involved in reviewing the permit applications and will be making appropriate recommendations to the Department of Environmental Conservation (DEC). Fish and Game will be invited to review and participate before each treatment is applied and to monitor the results.
- 4) Oxygen depletion from decaying vegetation in water is not applicable to the proposed applications because it is not proposed to apply RODEO to any water body.
- 5) The department plans to apply RODEO only when the wind is less than 5 mph to minimize "drift." Backpack hand-operated sprayers will also be used to further minimize the change for "drift."
- 6) RODEO concentrate and spray solution will only be used in plastic and polyethylene containers. Stainless steel backpack sprayers will be used for application. Possible corrosion from the small amount of RODEO which might fall onto steel guardrail sections is insignificant.

19. The data base for glyphosate is the largest in the world for any herbicide. Thousands of studies and over 20 years of use in a wide variety of applications

19. *(continued)*

provide scientists a great deal of confidence in estimating its risks to the environment and human health.

20. The department listened very carefully to the public over the last two years. We carefully recorded over 100 specific questions, comments, concerns, and suggestions from the public. We have studied this input extensively to assure we have reasonable responses. We have tried or carefully examined every alternative we know about in order to help address the roadside vegetation problem in Southeast Alaska. To date we have not found any other alternative to the limited use of chemicals which will effectively and efficiently help us solve the vegetation problem, but we will keep looking. We chose to apply RODEO because it is the safest chemical we could find and because it is backed up by an unusually extensive body of scientific data and experience. If other methods are discovered which can be effective and efficient, we will stop using RODEO.

After 15 years of exclusive use, it is clear mechanical methods alone cannot solve the vegetation problem in Southeast Alaska.

Information sheet on RODEO spraying -- February 7, 1994

1. DOT plans to spray "Rodeo" along roadside guardrails in eight southeast communities-Skagway, Haines, Juneau, Petersburg, Sitka, Wrangell, Ketchikan, and the state Prince of Wales Island road system. The spraying would occur between August 1 and October 31, 1994.
2. *Glyphosate (referred to as G throughout the text), the active ingredient in Rodeo, is a broad-spectrum nonselective herbicide toxic to deciduous vegetation and used in agricultural, urban, and forestry settings.
3. a. G is broken down by microbes into CO₂ and AMPA which is eventually broken down to formaldehyde, a well known human carcinogen and neurotoxin with a great potential to contaminate groundwater.
b. well known human carcinogen and neurotoxin with a great potential to contaminate groundwater.
c. G has been found in groundwater in Texas and Virginia.
4. *G is often contaminated with NNG during its manufacture. NNG is a member of the nitrosamine chemical family, 75% of which are carcinogenic.
5. *G is strongly attracted to soil particles and can therefore persist in the environment long after its application. Its half-life in soil in a Finnish study was 249 days; it was found in Ohio farming soils 152 days after application; G and its metabolites were found in stream bottom sediments at the end of a British Columbian study 574 days after timber was sprayed upstream.
6. a. *G travels long distances downstream in flowing waters and is detected in runoff months after its application. It travels far from its targets, especially in a wet climate, and has toxic effects on nontarget habitats and species of birds, insects, shrimp and crabs, fish, and small mammals. EPA
b. identified 76 species (74 plant, 2 animal) that may be jeopardized by G use.
7. a. *Defoliation caused by G increases stream temperatures and in turn, has negative effects on juvenile salmonid development. G can inhibit algal and other aquatic plant growth and disrupt the food chain of aquatic organisms. Studies have shown that where G is persistent in the environment, fish stocks
b. are depressed.
c. are depressed.
8. *People who harvest wild edibles-vegetation, berries, fish, and game-are the group most at risk from G exposure. The proposed spraying would occur during the period of heaviest recreational, fishing, berry picking, and hunting uses in adjacent areas. A person picking berries for four hours 30 days after the spraying receives a dose 4 times greater than the accepted dose. Residues greater than allowed for human consumption were found 61 days after G was sprayed on blue and red raspberries in a Canadian study. A person who eats 1/2 lb of contaminated vegetation receives 30 times the accepted dose of G.
9. *Herbivores have very high concentrations of G in their viscera up to 2 weeks after spraying. A month after forest was sprayed in the Oregon Coast Range in 1984, G residues in wildlife exceeded EPA standards for human consumption.
10. *California Department of Food and Agriculture reported to the EPA in 1988 that G ranked third in the number of illnesses reported from pesticide exposure.
11. *Accidental exposure of humans to G herbicides can cause: bronchial constriction, nausea, headache, pleuritic chest pain, conjunctivitis, corneal ulcers, contact dermatitis, swelling of extremities, nervous system disorders, dizziness, diarrhea, weakness, blurred vision. (EPA 86)
12. *Toxic effects of G on small mammals in lab studies include: mortality, hepatic necrosis, nephritis, diarrhea, nasal discharge, stomach hemorrhage, decreased food uptake and body weight, convulsive seizures (NIOSH, USDA 87). In feeding studies, mice developed abnormal livers and kidneys, and dogs suffered significant decreases in pituitary gland weights. Pregnant rats had offspring with abnormal bone development and low birth weights. Male rats had significant increases in pancreatic tumors and females in thyroid tumors.
13. *There is insufficient data available to determine the potential carcinogenicity, or the immunological and neurological toxicities of G. (EPA 86, FIFRA Science Advisory Panel)

14. a. The surfactant R-11 will be added to Rodeo. Since R-11 is not an active ingredient, it is not regulated by the EPA, and the manufacturer is not required to disclose its chemical makeup or its effects to the public--it is protected as a trade secret. However, the secret "inert" ingredients in many herbicides are often many times more toxic than the registered active ingredients. The surfactant used in RoundUp, another Monsanto glyphosate herbicide, is 400 times more toxic than G. Ortho X-77, another surfactant that Monsanto recommends for use with Rodeo, is toxic to aquatic life and causes breast cancer and reproductive problems.
- b. The EPA has toxicological information on only 29% of the 1,150 inert ingredients used in herbicides and pesticides. Your right to know about exposure to toxic chemicals is denied every time an herbicide is sprayed. Lacking the information of all on the chemicals in an herbicide, the DOT cannot guarantee that Rodeo is safe.
- d. The synergistic effects of Rodeo/glyphosate and R-11 are unknown.
15. *According to state law, pesticides shall not be applied: 1) to the waters of the State, 2) within 100 feet of waterbodies or wetlands, and 3) when wind speed exceeds 6 mph. DOT says they will not spray within 1/2 mile upstream of a potable water intake in flowing water or within 1/2 mile of a potable water intake in a lake or pond, and they will not spray when precipitation is imminent. All along each of the 3 Haines roads targeted for spraying are ponds, sloughs, streams, springs, and estuaries--waters used by humans and wildlife for drinking and foraging. It is impossible to prevent the herbicide from moving beyond the 3 foot-wide target area--it will contaminate nontarget habitats and species.
16. *DOT's primary objective is to reduce long-term maintenance costs of brush control, BUT there is no study that shows that herbicide use is less expensive than mechanical methods of removal. In Whitefield, Vermont, an extensive study on the costs of the two methods showed that mechanical removal was in fact less expensive, and as a result, the spraying did not occur. The following costs associated with herbicide spraying must be included in a cost analysis: training, licensing and insurance for applicators, sampling and lab testing, public notification and hearings, quarantining sprayed areas, disposal of contaminated soils and equipment, protective gear, and liability insurance.
17. *DOT has not indicated how and for how long it will quarantine sprayed areas and inform the public to avoid waters, vegetation and fruits, and fish and wildlife in both sprayed areas and areas downstream. DOT cannot guarantee that game and other foods will be uncontaminated.
18. *Monsanto product information says: 1) extremely cool or cloudy weather may slow Rodeo's activity necessitating repeat applications; 2) do not apply in estuaries; 3) consult local fish and game agency before applying; 4) oxygen depletion from decaying vegetation may result in fish kills; 5) do not spray when wind is greater than 5 mph because "...minute quantities of this product can cause severe damage or destruction to the crop, plants, or other areas on which treatment was not intended"; 6) Rodeo may cause corrosion of uncoated steel surfaces.
19. *Due to the lack of complete data, it is impossible to estimate the magnitude of risks posed by G herbicide use to the environment and human health.
20. It has been less than 2 years since DOT last proposed herbicide use along roads. DOT continues to ignore the public opinion that NO spraying is acceptable. It is time for a legislative solution...ATTEND the teleconference with Senator Ziehl and Representative Mackle on Thursday February 10 between 7 and 9 p.m. at the city council chambers. Express your opposition to herbicide use. ATTEND the teleconference for the House Transportation Committee's hearing on DOT's spraying proposal on Thursday, February 17 at 5 p.m. Express your opposition to herbicide use and your support for legislation to mandate mechanical control. ATTEND the DEC-sponsored public permit hearing on the proposed spraying--it will be held March 13 at 7 p.m. in the Chilkat Center.

For more information and complete references to the above information, contact:
Lynn Canal Conservation, Box 964, Haines, AK 99827, 766-2295

Information sheet on RODEO spraying – February 7, 1994

DOT plans to spray "Rodeo" along roadside guardrails in eight southeast communities-Skagway, Haines, Juneau, Petersburg, Sitka, Wrangell, Ketchikan, and the state Prince of Wales Island road system. The spraying would occur between August 1 and October 31, 1994.

*Glyphosate (referred to as G throughout the text), the active ingredient in Rodeo, is a broad-spectrum nonselective herbicide toxic to deciduous vegetation and used in agricultural, urban, and forestry settings.

*G is broken down by microbes (1) into CO₂ and AMPA which is eventually broken down to formaldehyde (2, 3), a well known human carcinogen and neurotoxin (4, 5) with a great potential to contaminate groundwater. G has been found in groundwater in Texas and Virginia (6).

*G is often contaminated with NNG during its manufacture, and NNG can form in soil after application of G. NNG is a member of the nitrosamine chemical family, 75% of which are carcinogenic (7, 8).

*G is strongly attracted to soil particles and can therefore persist in the environment long after its application (9). Its half-life in soil in a Finnish study was 249 days (10); it was found in Ohio farming soils 152 days after application (11); G and its metabolites were found in stream bottom sediments at the end of a British Columbian study 574 days after timber was sprayed upstream (12).

*G travels long distances downstream in flowing waters and is detected in runoff months after its application (13). It travels far from its targets, especially in a wet climate, and has toxic effects on nontarget habitats and species of birds, insects, shrimp and crabs, fish, and small mammals (14). EPA identified 76 species (74 plant, 2 animal) that may be jeopardized by G use (15).

*Defoliation caused by G increases stream temperatures and in turn, has negative effects on juvenile salmonid development. G can inhibit algal and other aquatic plant growth and disrupt the food chain of aquatic organisms (16, 17). Studies on the environmental fate of G were not required for its initial registration (15).

*People who harvest wild edibles-vegetation, berries, fish, and game—are the group most at risk from G exposure. The proposed spraying would occur during the period of heaviest recreational, fishing, berry picking, and hunting uses in adjacent areas. A person picking berries for four hours 30 days after the spraying receives a dose 4 times greater than the accepted dose (18). Residues greater than allowed for human consumption were found 61 days after G was sprayed on blue and red raspberries in a Canadian study (19). A person who eats 1/2 lb of contaminated vegetation receives 30 times the accepted dose of G (20).

*Herbivores have very high concentrations of G in their viscera up to 2 weeks after spraying (20). A month after forest was sprayed in the Oregon Coast Range in 1984, G residues in wildlife exceeded EPA standards for human consumption (21).

*California Department of Food and Agriculture reported to the EPA in 1986 that G ranked third in the number of illnesses reported from pesticide exposure (15).

*Accidental exposure of humans to G herbicides can cause: bronchial constriction, nausea, headache, pleuritic chest pain, conjunctivitis, corneal ulcers, contact dermatitis, swelling of extremities, nervous system disorders, dizziness, diarrhea, weakness, blurred vision. (22)

*Toxic effects of G on small mammals in lab studies include: mortality, hepatic necrosis, nephritis, diarrhea, nasal discharge, stomach hemorrhage, decreased food uptake and body weight, convulsive seizures (23, 18). In feeding studies, mice developed abnormal livers and kidneys, and dogs suffered significant decreases in pituitary gland weights. Pregnant rats had offspring with abnormal bone development and low birth weights. Male rats had significant increases in pancreatic and liver tumors, and females, in thyroid tumors. (15)

*There is insufficient data available to determine the potential carcinogenicity, or the immunological and neurological toxicities of G (15).

*The surfactant R-11 will be added to Rodeo. Since R-11 is not an active ingredient, it is not regulated by the EPA, and the manufacturer is not required to disclose its chemical makeup or its effects to the public--it is protected as a trade secret (24). However, the secret "inert" ingredients in many herbicides are often many times more toxic than the registered active ingredients (25). The surfactant used in RoundUp, another Monsanto glyphosate herbicide, is 400 times more toxic than G (30). Ortho X-77, another surfactant that Monsanto recommends for use with Rodeo, is toxic to aquatic life and causes breast cancer and reproductive problems (26, 27, 28).

The EPA has toxicological information on only 29% of the 1450 inert ingredients used in herbicides and pesticides. Your right to know about exposure to toxic chemicals is denied every time an herbicide is sprayed. Lacking the information of all on the chemicals in an herbicide, the DOT cannot guarantee that Rodeo is safe.

The synergistic effects of Rodeo/glyphosate and R-11 are unknown (29).

*According to state law, pesticides shall not be applied: 1) to the waters of the State, 2) within 100 feet of waterbodies or wetlands, and 3) when wind speed exceeds 6 mph. DOT says they will not spray within 1/2 mile upstream of a potable water intake in flowing water or within 1/2 mile of a potable water intake in a lake or pond, and they will not spray when precipitation is imminent. Along many of the roads targeted for spraying are ponds, sloughs, streams, springs, and estuaries--waters used by humans and wildlife for drinking and foraging. It is impossible to prevent the herbicide from moving beyond the 3 foot-wide target area--it will contaminate nontarget habitats and species.

*DOT's primary objective is to reduce long-term maintenance costs of brush control, BUT there is no study that shows that herbicide use is less expensive than mechanical methods of removal. In Waitfield, Vermont, an extensive study on the costs of the two methods showed that mechanical removal was in fact less expensive, and as a result, the spraying did not occur. The following costs associated with herbicide spraying must be included in a cost analysis: training, licensing and insurance for applicators, sampling and lab testing, public notification and hearings, quarantining sprayed areas, disposal of contaminated soils and equipment, protective gear, and liability insurance.

*DOT has not indicated how and for how long it will quarantine sprayed areas and inform the public to avoid waters, vegetation and fruits, and fish and wildlife in both sprayed areas and areas downstream. DOT cannot guarantee that game and other foods will be uncontaminated.

*Monsanto product information says: 1) extremely cool or cloudy weather may slow Rodeo's activity necessitating repeat applications; 2) do not apply in estuaries; 3) consult local fish and game agency before applying; 4) oxygen depletion from decaying vegetation may result in fish kills; 5) do not spray when wind is greater than 5 mph because "...minute quantities of this product can cause severe damage or destruction to the crop, plants, or other areas on which treatment was not intended"; 6) Rodeo may cause corrosion of uncoated steel surfaces.

*Due to the lack of complete data, it is impossible to estimate the magnitude of risks posed by G herbicide use to the environment and human health.

For more information and complete references to the above information, contact:
Lynn Canal Conservation, Box 964, Haines, AK 99827, 766-2295

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DOT&PF COMMENTS
ON
"RODEO FACT SHEET"
FROM
PETERSBURG

→ Page 3

February 16, 1994

The Alaska Department of Transportation and Public Facilities (DOT&PF) proposes to use RODEO at guardrail sections along the Mitkof Highway in the Petersburg area this year.

1. RODEO will be applied a safe distance from picnic areas, boat ramps and water bodies based on the instructions for use and other scientific information available to us.
2. Risk analyses by the Washington State Environmental Impact Statement on Roadside Vegetation Management indicate the maximum risk of adverse effects associated with recreation, fishing, berry picking and hunting activities from the plan to use RODEO is "negligible," or less than the risks associated with one transcontinental flight per year.
3. The statement in the "Fact Sheet" that glyphosate "is from a family of known carcinogens" is false or misleading at best. The EPA has recently reclassified glyphosate, the active ingredient in RODEO, as "evidence of non-carcinogenicity in humans," its most safe classification group, based on its review of scientific studies.
4. The product label basically advises against application within one-half mile of a potable water intake; it does not prohibit its use in other water bodies. In fact RODEO is one of the few substances approved for use directly in water and estuaries to control undesired vegetation.
5. The Oregon Coast Range Study was an aerial spray over a whole forest area and in no way comparable to the site-specific hand-spray application along roadsides proposed by the department.

It would be expected to find G in the viscera of forest animals eating material containing G. The tests include the viscera as well as the material containing G which is in the viscera. A quick look at these studies further shows that the concentration of G found in the viscera follows the concentration in the food supply, indicating it passes through and does not accumulate in the animals. The proposed program applies considerably less RODEO per acre than the aerial spraying and is limited to very site-specific areas immediately adjacent to roadways using backpack sprayers for controlled application. It is incorrect and misleading to imply or suggest results from the aerial spraying over a whole forest would be found in game animals or fish as a result of site-specific backpack spraying along roadside guardrails. This is further supported by the EPA's health bulletin on glyphosate which quoted studies showing glyphosate was not detectable in the meat and fat of cows, swine, and chickens fed glyphosate at the rate of 75 parts per million. Similar results were noted in milk and eggs from cows and chickens on diets containing glyphosate. Alder, the primary plant targeted for treatment, is not a significant source of food for

5. (continued)

deer and, based on the limited application area along the road, would not be expected to produce measurable amounts of RODEO in deer meat. Since RODEO is not planned for use on water; is shown to biodegrade rapidly; is not shown to bioaccumulate; and it strongly adheres to soil, it is not plausible to expect measurable amounts of RODEO will end up in water or harvested fish as a result of the proposed plan.

6. There is no question the application of RODEO is less expensive and more effective than other known methods, even when the "full" costs described are calculated. This is true even though the proposed method to use backpack sprayers is much more costly than other methods of RODEO application, i. e., truck-mounted boom or aerial spraying.
7. DOT&PF withdrew its applications after public hearings last year because the public raised over 100 important questions, concerns, comments and suggestions for which adequate answers were not available. The department has studied this public input extensively to assure it has reasonable responses. It has tried or carefully examined every alternative it could find in order to help address the roadside vegetation management problem. To date no other alternative has been found to limited use of chemicals which will efficiently and effectively help solve the vegetation problem.

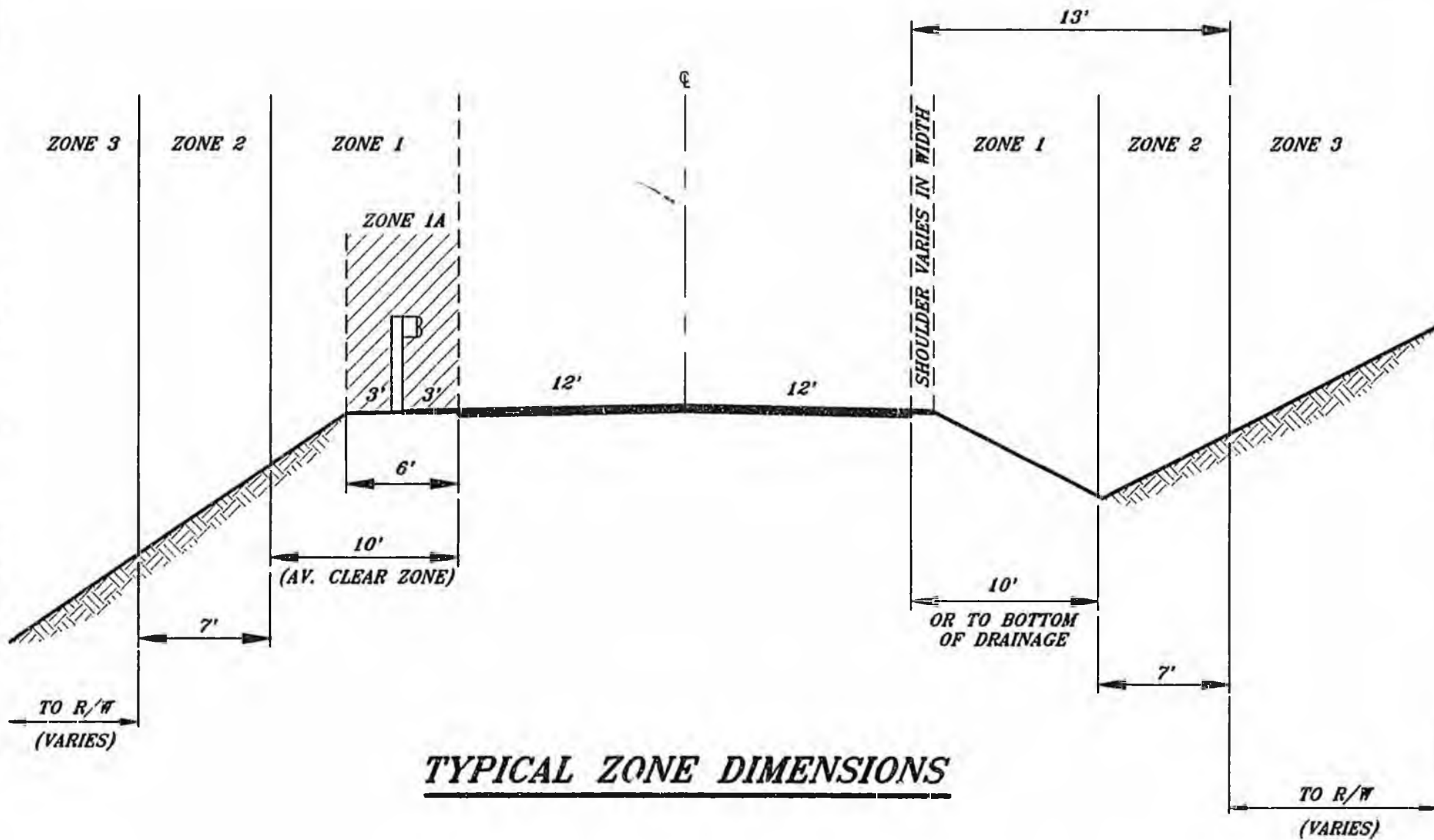
RODEO is the safest substance DOT&PF could find that is backed up by an unusually extensive worldwide body of scientific data and experience. Based on review of the information available, DOT&PF is convinced the amounts and methods proposed to be used on site-specific areas can be done safely.

Finally, DOT&PF has developed a comprehensive vegetation management program for the entire Southeast Region as suggested by the public, which includes mechanical methods being applied to more than 99 percent of the roadside right of way and RODEO used on less than one percent. If another method can be found to be as effective and efficient, DOT&PF will stop using RODEO.

8. R-11 has been used for years with RODEO. It meets the safety standards for exposure to aquatic species with considerable safety margins. Aquatic toxicology tests available on use of R-11 indicate the risk to inhabitants of streams or ponds by the proposed application method is negligible. Information available clearly indicates the amount and method of application will not result in toxic effects on billed creatures.

"RODEO" FACT SHEET

1. The State Department of Transportation has applied to spray the herbicide "Rodeo" to guardrail locations along the Mitkof Highway from mile 27 to mile 34 this summer. This includes areas near the Wilson Creek picnic area, the Mile 28 boat ramp, the boat ramp at mile 33, and along Sumner Strait. Wilson Creek and the unnamed cree at Mile 32 will be affected as well.
2. The period of possible spraying will coincide with the period of heaviest recreational, fishing, berry picking, and hunting use along the Mitkof Highway - August 1 through October 31. Rodeo can only be applied during periods of guaranteed dry weather, due to possible runoff. This is exactly when area residents frequent the Mitkof Highway most.
3. The active ingredient (glyphosate) in Rodeo is from a family of known carcinogens.
4. The product label (and ultimate authority on the use of the herbicide) directs applicators "not to spray within 1/2 mile of potable (*drinkable*) water." How can this be accomplished when individuals drink from just about any body of water on the island?
5. Forest creatures eat repeated doses when they ingest Rodeo-laden vegetation. In one study, during the first month after spraying glyphosate residue levels in the Oregon Coast Range wildlife exceeded legal standards for human edibility. Residues of this herbicide are stable when frozen. Since residents of the island harvest fish and game from the island, DOT cannot guarantee there will be no contamination of game and likewise introduction of the chemical into humans.
6. The application of herbicides is not necessarily less expensive than other methods when the full costs are calculated. ie. training and licensing of applicators, insurance for pesticide applicators, sampling and laboratory testing, public notification and hearings, possible costs of a personal liability lawsuit for impacting private property or natural resources, disposal of contaminated soils, vegetation, protective gear, wash waters, etc.?
7. Due to overwhelming public opposition during the spring of 1992 the State DOT decided not to spray the herbicide. Now less than two years later, they are proposing it again, in even more communities in Southeast than the original proposal. DOT should initiate an in-depth study of all methods of vegetative management (steam treatment, salt water treatment, prison labor, pulling up by roots, etc.) and develop a statewide or regional integrated vegetative brush control program. This would eliminate the need for individuals to constantly have to comment on the same issue every year or two.
8. The inert ingredients of the "surfactant" ("R-11") used in the herbicide mix is unknown. Surfactants are often more toxic than the herbicide itself but EPA does not require chemical companies to divulge "trade secrets." *R-11 IS VERY TOXIC TO AILED CREATURES.*



**DOT&PF
SOUTHEAST REGION
VEGETATION MANAGEMENT PROGRAM
AVERAGE COSTS**

ITEM	COST VARIANCE	EXPERIENCED COSTS PER UNIT (MILE, ACRE, EACH)								EACH
		HIGH	CHEMICAL		HAND		MACHINE		OTHER	
LOW	\$/MILE	\$/ACRE	\$/MILE	\$/ACRE	\$/MILE	\$/ACRE	\$/MILE	\$/ACRE	\$/MILE	\$/ACRE
ANNUAL INSPECTIONS									\$40	\$3
ZONE 1										
GUARDRAIL	A	\$850	\$750	\$3,170	\$4,340	\$440	\$600			
		\$250	\$325	\$2,130	\$2,900	\$300	\$400			
REGULAR	B		\$750	\$10,500	\$4,340	\$515	\$450			
			\$325	\$7,600	\$2,900	\$345	\$300			
MEDIAN	C						\$620	\$170		
ZONE 2										
SIGHT DIST.	A				\$4,340		\$600			
					\$2,900		\$400			
REGULAR	B				\$4,340		\$600			
					\$2,900		\$400			
DRAINAGE	C				\$4,340					
					\$2,900					
ZONE 3										
DANGER TREES	A									\$200
SCENIC VIEWS	B				\$4,340		\$2,500		\$2,000	
					\$2,900		\$2,000			
WILD LIFE	C				\$4,340		\$2,500		\$2,000	
					\$2,900		\$2,000			
EROSION	D				\$4,340		\$2,500		\$2,000	
					\$2,900		\$2,000			
SAFETY MOD.	E				\$4,340		\$2,500		\$2,000	
					\$2,900		\$2,000			
BEAUTIFICATION	F				\$4,340		\$2,500		\$2,000	
					\$2,900		\$2,000			

NOTES:

1. Chemical application and subsequent hand or machine treatment does not occur in the same year in order to allow full effect of the chemical treatment.
2. Chemical treatment costs of guardrail is based upon manual application on zone 1A only. High cost is for previously untreated, heavy concentrations of alder. Low cost is previously treated or boom application not to exceed 10' in width.

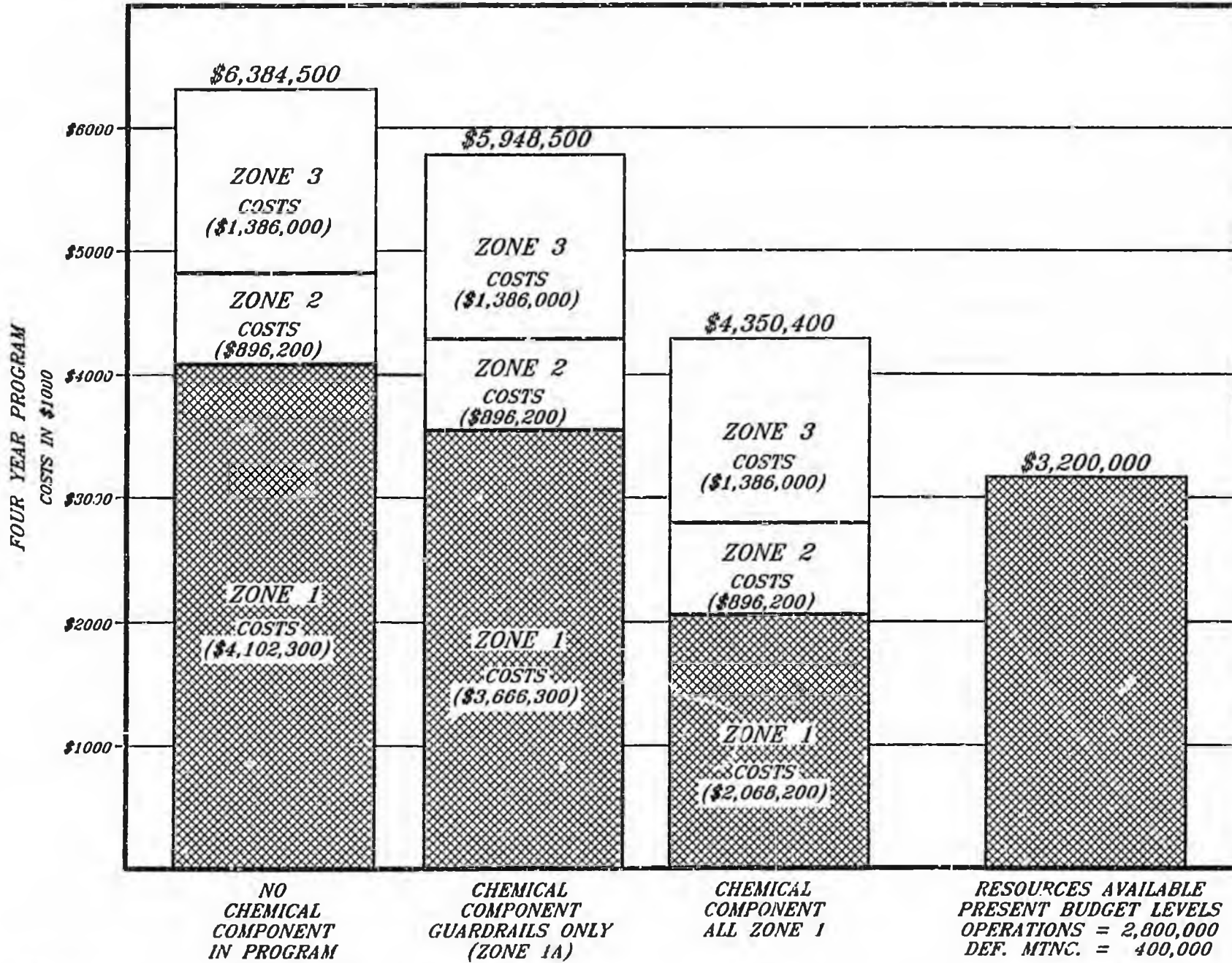
EXPERIENCED 1993 COSTS BY VARIOUS METHODS FOR GUARDRAIL ZONE 1A

METHOD		\$/MILE	\$ ANNUAL PROGRAM	ONE TIME COST/MILE
PRISON LABOR	(1)	\$1,145	\$114,500	
CONTRACT		\$3,165	\$316,500	
NON-PERM LABOR		\$2,957	\$295,700	
BCSCAT PUSHER		\$2,757	\$275,700	
GUARDRAIL MACHINE	(2)	\$632	\$63,200	
PERM. LABOR		\$3,452	\$345,200	
GUARDRAIL PAVING				\$23,450

(1) Not available everywhere.

(2) Machine arrived late in October. (very limited experience and cost collection)

DOT/PF
SOUTHEAST REGION
FOUR YEAR VEGETATION MANAGEMENT PROGRAM



STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
SOUTHEAST REGION
ANNUAL VEGETATION MANAGEMENT PLAN

(NO CHEMICALS USED)

CONTROL METHOD	1994					1995					1996					1997					FOUR YEAR PROGRAM COST												
	ACRES (AMOUNT)				TOTAL COST (EST)	ACRES (AMOUNT)				TOTAL COST (EST)	ACRES (AMOUNT)				TOTAL COST (EST)	ACRES (AMOUNT)				TOTAL COST (EST)													
	CHEM	HAND	MACH	OTHER		CHEM	HAND	MACH	OTHER		CHEM	HAND	MACH	OTHER		CHEM	HAND	MACH	OTHER		CHEM	HAND	MACH	OTHER									
ZONE 1 (ANNUAL ATTENTION)																																	
GUARDRAIL	100 MILES	73 ACRES	A	0	30	43				\$158,000	0	30	43								\$158,000	0	30	43									
REGULAR	1000 MILES	1177 ACRES	B	0	50	1161				\$886,000	0	50	1161								\$823,300	0	50	1161									
MEDIAN	9 MILES	33 ACRES	C	0		132				\$5,800	0		132								\$5,800	0		132									
TOTAL	1169 MILES	1283 ACRES		0	80	1,336	0	0	0	\$1,147,600	0	80	1,336	0	0	0	0	0	0	0	\$984,900	0	80	1,336	0	0	0	0	0	0	\$884,900	\$4,102,300	
ZONE 2 (3 YEAR ATTENTION)																																	
SIGHT DISTANCE			A	0	7	14				\$38,800	0	7	14								\$38,800	0	7	14									
REGULAR			B	0	15	274				\$229,500	0	15	274								\$153,100	0	15	274									
DRAINAGE ASSIST			C	0	4					\$17,400	0	4									\$11,600	0	4										
TOTAL	1069 MILES	901 ACRES		0	26	288	0	0	0	\$285,700	0	26	288	0	0	0	0	0	0	0	\$203,500	0	26	288	0	0	0	0	0	\$896,200			
ZONE 3 (5 YEAR ATTENTION)																																	
										(AMT)											(AMT)												
DANGERTREES			A	0						100	\$20,000	0									50	\$10,000	0										
SCENIC VIEWS			B	0	14	4				\$22,000	0	14	4								\$22,000	0	14	4									
WILDLIFE PROTECTION			C	0		20				\$50,000	0		20								\$50,000	0		20									
EROSION CONTROL			D	0	5					\$12,500	0	5									\$12,500	0	5										
SAFETY MODS			E	0	10	90				\$225,000	0	10	90								\$225,000	0	10	90									
BEAUTIFICATION			F	0	5	5				\$27,500	0	5	5								\$27,500	0	5	5									
TOTAL	1069 MILES	2689 ACRES		0	34	119	100	0	0	\$357,000	0	34	119	50	0	0	0	0	0	0	\$347,000	0	34	119	20	0	0	0	\$331,000	\$1,386,000			
CENTERLINE	1069 MILES	4882 ACRES		0	140	1743	100	0	0	\$1,790,300	0	140	1743	50	0	0	0	0	0	0	\$1,535,400	0	140	1743	20	0	0	\$1,529,400	\$6,384,500				

