

# A SOCIAL TRAP ANALYSIS OF THE LOS ANGELES STORM DRAIN SYSTEM: A RATIONALE FOR INTERVENTIONS<sup>1 2</sup>

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## *Abstract*

*The principles of analyzing social traps can be used to devise intervention strategies for the problems of toxic and solid waste dumping into the Los Angeles storm water drain system. Both problems readily fit into the social trap model. Intervention strategies center on 1) bringing long-term negative consequences to bear on behavioral choices of offenders, 2) increasing short-term positive consequences for correct behaviors, 3) decreasing short-term negative consequences that prevent correct behaviors, 4) increasing short-term negative consequences for environmentally destructive behaviors, 5) decreasing short-term positive consequences that support inappropriate behaviors, and 6) educating the public on the long-term positive consequences of appropriate behaviors.*

## INTRODUCTION

The dumping of hazardous materials and solid wastes into Greater Los Angeles storm drains, including cigarette products, plastics, and the unlawful disposal of used motor oil and dead batteries, is a classic example of a social trap. The interdisciplinary term “social trap” refers to situations where individuals responding in their own short-term self-interest engage in behaviors that, in the long run, lead to drastic negative societal consequences (Platt, 1973; Cross & Guyer, 1980). Other examples of social traps are global warming, the destruction of tropical rainforests, the over-harvesting of ocean fisheries, air pollution from internal combustion engines, and the overload of electrical power grids. In each of those environmental crisis situations, human beings are engaging in behaviors for their own self-interest in the short-term, such as using ozone depleting chemicals, cutting forests to increase agricultural land and harvesting wood for product making, catching fish for commercial sales, operating gas and diesel vehicles and generators, or turning on appliances, heaters or air conditioning. In each of those cases, the individual behaviors for short-term rewards lead to negative, long-term consequences that collect and amplify to become major societal problems.

The Los Angeles Basin is home to approximately 12 million people. See Figure 1. The basin contains several major watersheds in approximately 1500 square miles: The Los Angeles River, Ballona Creek, Dominguez Channel, and the San Gabriel River. The Los Angeles River collects water from Bell Creek and Calabasas Creek in the Santa Susana Mountains, Sepulveda Basin and Big Tujunga Wash in the San Fernando Valley, Verdugo Wash in the Verdugo Mountains, and the Arroyo Seco from the western San

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<sup>1</sup> This paper was presented at the 118<sup>th</sup> annual convention of the American Psychological Association, San Diego, CA, August 12, 2010. Grateful thanks to Louis M. Goldich, David R. Fertig, and Leslie Sanchez for their help on this paper.

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Gabriel Mountains. Nine-mile long Ballona Creek drains from the Santa Monica Mountains, collecting water (and trash) from areas of western Los Angeles, Culver City, and the Baldwin Hills, and enters Santa Monica Bay between the communities of Marina Del Rey and Playa Del Rey. Dominguez Channel is a stream that originates in the City of Hawthorne and travels south through the cities of Gardena, Alondra Park, Torrance, Harbor Gateway, Carson, and Wilmington, then south to the East Basin of the Port of Los Angeles. Drainage from the eastern San Gabriel Mountains to the San Bernardino Mountains to the east collects in the San Gabriel River, which is joined by Rio Hondo. Also of importance are the Santa Monica Canyon drainage and the Santa Ana River drainage to the south in Orange County. Several natural water features important to migrating water fowl and other animals include the Ballona Wetlands, Whittier Narrows, Upper Newport Bay, Anaheim Bay, and Bolsa Chica. In addition, several man-made water features have also become important spots for wild fowl, including the Venice canals, Naples Bay, Lower Newport Bay, Puddingstone Reservoir, Lake Hollywood, Echo Park Reservoir, Silver Lake, Johnson Lake, and others.

The storm drain system is separate from the sewer system and differs from the sewers in that it has no treatment plants for processing solid and chemical wastes. Generally, the storm drain system relies on draining runoff into the natural, and usually concrete-lined, watershed channels. The City of Los Angeles has several “trash trap” mesh barriers to filter some of the trash, but most of the effluent flows freely and directly into Santa Monica Bay and the Pacific Ocean. A joint project of the Algalita Research Foundation and the California Coastal Commission estimated that human-made debris was the largest world-wide source of marine debris in the ocean, comprising nearly 80 percent of all marine debris. (Algalita Marine Research Foundation, 2010).

On one day in September, 2007, 11,020 volunteers from Heal The Bay, a nonprofit organization sponsored by the Santa Monica Bay Aquarium, collected 83,434 pounds (41 tons/37,845 kg) of trash from 66 locations along the beaches and estuaries that feed Santa Monica Bay (Apper, 2007). Heal The Bay reported that between 1985 and 2006 their volunteers collected:

4,281,104	Cigarettes and cigarette filters
954,882	Caps and lids
947,219	Food wrappers and containers
846,320	Bags
706,531	Cups, plates, forks, knives, spoons
455,796	Straws and stirrers
367,448	Beverage bottles (glass)
306,067	Beverage bottles (plastic)
271,608	Beverage cans
234,954	Building materials

These figures represent just the collections by one volunteer organization. It does not include the even greater masses of trash and toxic wastes collected by other agencies and by the government workers for the city and county of Los Angeles. The scope of the problem is enormous. The city and county governments put great effort and study into alleviating the problems (c.f. City of Los Angeles, 2000), but the problem is overwhelming.

This paper attempts to analyze the problem by looking at the behavioral factors that operate on the people who create the waste, using the principles of social trap analysis. In Los Angeles, individuals seeking to dispose of toxic wastes, paint products, soaps, soiled baby diapers, beverage containers, garden chemicals, and a plethora of other discardable solid wastes often engage in behaviors that cause those agents to end up as effluent in the storm water drainage system. The long-term negative consequence of the collective individual behaviors is pollution of the bay and ocean.

The long-term consequences often occur at great physical distances from the where the individual behaviors are occurring. For example, consider a lawn in the foothill community of Azusa, California, which has been treated with herbicides to kill weeds. An inattentive homeowner becomes distracted and allows the sprinkler to over-water the lawn. The herbicide-carrying water overflows the curb, runs down the gutter and into the storm drain. That run-off herbicide eventually ends up in Santa Monica Bay 35 miles (56 km) away. The City of Los Angeles Stormwater Management Division reported in 2002 that areas of the city with the highest rates of trash generation are, in rank order, Central City Downtown, Westlake, Central City North, Southeast Los Angeles, South Central Los Angeles, Wilshire, and West Adams. For the most part, these communities are nowhere near the bay. (City of Los Angeles, 2002)

Similarly, for a person facing the problem of the disposal of used motor oil, it is often easier for that person to dump the oil in a vacant lot or unattended dumpster than it is to collect it in a sealed container and drive it to an authorized collection center. In both examples, the long-term consequences are separated from the individual polluter by both time and distance.

For a person who smokes cigarettes and is not near an ashtray, it is very common to crush the cigarette underfoot and leave the extinguished butt behind. The response cost of that behavior is much less than extinguishing the fire, collecting the cigarette butt, and storing it until an ashtray or waste container can be located. The short-term negative consequences of the latter behavior include soiling the hands with charcoal and tars, and carrying around the noxious odor of a cigarette butt. It is so much easier to crush the cigarette underfoot and leave. What is left behind is tobacco, which can bio-degrade into the soil, chemically-treated paper, and a cellulose acetate filter containing a residue of tars. The Ocean Conservancy, the world's largest volunteer organization dedicated to the oceans' health, estimated that 60-80 percent of all marine debris came from the land. Of all the debris they collected worldwide 60% of it were "disposable" items. Of all the debris they collected worldwide, 21 percent of it was cigarettes and cigarette filters, and represented by far largest category of debris, nearly twice the frequency of the next most frequent debris category of plastic bags. (Ocean Conservancy, 2010). In the Santa Monica Bay collection sample listed above, cigarettes and cigarette filters also were by far the greatest category of debris collected and was over 4 times the amount of the next debris category of caps and lids. Cigarettes and cigarette filters are included in the Ocean Conservancy's list of twenty debris items known to be harmful to wildlife. All of this cigarette debris is created by individual people's behavior.

## INTERVENTION STRATEGIES

Solutions to the problems of storm sewer pollution and the inappropriate disposal of used motor oil can be identified by analyzing those problems based upon the reinforcement structure commonly found in social traps. One characteristic of social trap analysis is that target behaviors are identified and scrutinized for strategies to change them to more environmentally healthy behaviors. Generally, interventions are sought that will alter the reinforcement structure in such a way to change the target behaviors.

Key to the analysis of social traps is the concept of superimposed schedules of reinforcement. Platt (1973) and Cross and Guyer (1980) described how people behaving in social traps have both short-term positive consequences and long-term negative consequences operating simultaneously. Brechner (1974, 1977) introduced the concept of superimposed schedules of reinforcement in order to create a laboratory analogy of a social trap. The basic idea is that a given behavior results in multiple consequences that each can be either positive or negative and immediate or delayed (Brechner and Linder, 1981). In controlled laboratory settings, positive and negative consequences can be precisely defined into schedules to create not only social traps but many other individual and social situations such as smoking and drug addictions (one-person traps) and approach-avoidance conflicts. In less-controlled field settings, where humans are behaving freely, the precision of introducing superimposed schedules is not possible, but the concept underlying the idea of superimposed schedules still is very much operational. That is, that humans live in a lifespan of choices. Each of those choices has multiple consequences both good and bad. Similar to Fourier analysis in mathematics and mechanics, social trap analysis looks at the way the multiple consequences sum together to control or, at least, influence behavior. It is akin to a cost-benefit analysis in economics, except that the costs and benefits are not just monetary in nature. Other social factors come to bear such as probabilities of being caught for unlawful behaviors, approval of peers and loved ones, time factors, and distance from consequences.

Since rewards and reinforcement are often linked directly or indirectly to the concept of energy, it can be very useful to create an energy flow diagram of the system under study using the techniques created by Odum (1971) and Odum and Odum (1974). See Figure 3. It shows how humans interact with natural cycling of sun-driven precipitation to drive trash and toxic waste into Santa Monica Bay. Such diagrams can give a very good indication of where energy and money is flowing and point to suggestions for interventions.

Some of the key terms used in the analysis of Social Traps are presented below in Appendix One.

Generally speaking, social traps can be analyzed by examining the underlying reinforcement structure and then making interventions to change the structure where it is politically and practicably feasible. Overall, the strategy is to increase the positive rewards for appropriate behaviors and increase the ease with which those behaviors can occur. The strategy is to decrease those things that make inappropriate behaviors easily rewarded. And the strategy is to increase the awareness of the long-term negative consequences caused by the inappropriate behaviors of polluting the storm drains and the long-term positive consequences of appropriate disposal of wastes.

Basically, strategies to correct the problems involve:

**1) Bringing the long-term consequences to bear on the individual behaviors by increasing public awareness of the problems of dumping.**

This involves creating a knowledge that what occurs at a later time in a distant place results directly from the individual's behavior. It also involves raising people's awareness that the long-term negative consequences are actually having an impact on their individual lives. In other words, teach them they are poisoning themselves with their own acts. In addition, attempts are made to teach the long-term positive consequences of appropriate behaviors. Ways to accomplish this include TV and radio spot ads, print ads, displays in public library showcases, traveling exhibits in malls and high volume shopping areas, elementary school assemblies and library displays, working with youth organizations like the boys scouts, girl scouts and the Boys and Girls Clubs.

A great example is the poster published by the City of Los Angeles (<http://www.lastormwater.org/Siteorg/education/poster97.htm>) showing a curb storm drain surrounded by trash. On the sidewalk is the blue warning sign that this drain goes directly to the ocean. The street area is transparent and porpoises and other sea life can be seen swimming under the drain, which perfectly serves the purpose of demonstrating the long-term danger of trash getting into the storm drains.

Another example of the use of social trap principles in a media campaign were the English and Spanish language television Public Service Announcement (PSA) spots titled "The Lifeguard," created in 1995 for the County of Los Angeles Department of Public Works by the Sierra Group and produced by Rebecca V. Barrantes, Katherine Padilla, and this author. See Figure 2.

The spots showed neighbors emptying antifreeze into the storm drain, washing debris down to the curb, spraying insecticide, washing their car in the driveway, and sloppily cleaning paint brushes. Then, celebrity George Lopez appeared like a genie in a puff of smoke out of the storm drain, carrying a dead fish skeleton to warn neighbors of the harmful effects of their polluting. He throws the fish skeleton onto the sidewalk above the drain and the image morphs into the blue warning label of a fish skeleton surrounded by words stating that the drain goes straight to the ocean. Again, the purpose was to educate the public about the long-term consequences of their behaviors, in a way that showed that what seemed like normal behaviors to them had very bad consequences. The idea was to bring the long-term consequences closer to the behaviors. George Lopez, although young at the time, was still an up-and-coming authority figure to both the Spanish and English speaking audiences.

**2) Increasing the short-term positive consequences reinforcing appropriate behaviors.**

This involves creating strategies that could range from monetary rewards, prizes, discounts, to social rewards such as showing praise from children and family members or demonstrating increased attraction by the opposite sex for people who properly dispose of wastes. An example might be to create a media campaign that shows a beautiful woman praising a man for putting his cigarette butt in the proper receptacle. Another example would be to award with a small prize those kids in a classroom who can explain how to properly dispose of plastic grocery bag, another big polluter of the oceans. Another example would be to extend the CRV (California Redemption Value) recycling refunds

to other materials besides beverage bottles and cans, such as plastic grocery bags. The key to make that cost-effective is to create a situation where the cost of refunds are less than the current costs to clean up the abandoned bags in the storm drains. One way to do that is to pass an ordinance requiring stores to collect a deposit on each plastic bag in the same way CRV deposits are collected on beverage containers. In addition, the deposit might encourage more people to bring reusable bags to the grocery store, and use fewer plastic bags.

**3) Decreasing the short-term negative consequences preventing appropriate behaviors.**

Within this category is the idea of reducing the response costs of correctly disposing of waste materials. In other words, if you can make it easier for someone to properly dispose of wastes, they are more likely to do it. An example could be the creation of free oil collection containers that could funnel used motor oil directly from the car into a sealed container for ease of disposal. Another example would be to arrange for curbside pick up of waste motor oil by city or private recyclers, rather than requiring the oil to be taken to a distant collection center. Regarding the problem of cigarette butts, creating the idea that it is socially acceptable to put an extinguished cigarette butt back into cigarette pack is a way to reduce the response cost of retrieving the cigarette butt and taking it for proper disposal. Another idea is to work with cigarette manufacturers to create a sliding card stock partition in their cigarette packs that could be used to store extinguished butts separately from unused cigarettes.

**4) Increasing the short-term negative consequences for inappropriate dumping.**

Strategies in this category includes increasing sanctions and criminal penalties for illegal dumping, increased enforcement of existing sanctions, and use of social reinforcers such as criticism from loved ones, positive role models, or attractive same-aged members of the opposite sex. Another example is the installation of obvious surveillance cameras over empty lots where dumping is occurring, or the use of security guards in those cases.

**5) Decreasing the short-term positive consequences that reinforce inappropriate behaviors.**

This can be one of the most difficult strategies to create because the opportunities to dump inappropriately come in so many forms. One example is to lock up dumpsters where people are illegally dropping oil containers and dead batteries. Another example could be to install wire grates over storm drain openings making it harder for gardeners to blow lawn debris into storm drains.

**6) Educating the public on the long-term positive consequences of appropriate behaviors.**

This is done through media campaigns of print ads, radio and television public service announcement spots, billboards, supermarket grocery bag printing, and social media postings. Most adults still remember the very effective anti-littering PSA spot from years ago with actor Iron Eyes Cody portraying an American Indian who silently cries a tear when he sees the how littering pollutes the environment. Many examples of

these anti-littering PSA spots have been created by the Ad Council over the years. Although they do raise awareness of the long-term consequences, their effectiveness is questionable by the reality of masses of waste that still gets into the storm drain system. This approach does not seem to be effective by itself. It needs to be combined, even within the same PSA, with some of the other strategies listed above that directly affect the short-term consequences, at the times of the behaviors themselves.

#### EXAMPLE OF A MEDIA CAMPAIGN USING THE PRINCIPLES OF SOCIAL TRAP ANALYSIS

Media campaigns can be a very cost effective way to reach mass numbers of people, through TV and Radio Spots, especially if they are also uploaded to social media networks like YouTube, Facebook, MySpace, Twitter and others. Carefully constructed spot ads can combine several of the intervention strategies at one time.

Appendix Two contains two scripts as examples of PSA spots that could be used for television/video or radio spots. They address the problem of people snuffing out and abandoning cigarettes, which is a major marine pollutant. Both scripts may be used by you to produce spots in your own community. The theme of the campaign is “Don’t be a Butthead.” A few years ago the use of “Butthead” might have been offensive but after the successful animated characters in *Beavis and Butt-head*, the term is now in common usage and is used in this case as a potential catch phrase. If accepted by the general public and spread through word of mouth (which is one of the goals of any media campaign), it could come to be used by the public to identify people who do not clean up and properly dispose of cigarettes.

The principal features of these spots are:

1. Repetition of the key words “Don’t be a Butthead.” “Repetition is the mother of learning,” A. Reinhold
2. Use of short-term social reinforcement to establish what is inappropriate behavior for the disposal of cigarettes.
3. Use of attractive opposite-sex characters, celebrities, and role models to deliver the short-term reinforcement contingencies of praise and rejection. In Spot #1, the genders could be switched between whether the man or the woman was the transgressor. In Spot #2, a clever producer might be able to convince *Beavis and Butt-head* creator Mike Judge to allow an animation of Butt-Head saying the catchphrase in this spot.
4. Attempt to educate the public about the long-term negative contingencies.
5. Short-term positive reinforcement (“Not anymore”) for appropriate behavior.
6. Use of auditory cues (sounds of the ocean and seagulls) to strengthen the image of the long-term consequences.

Using these spots as the basis for the campaign, print ads, billboards, social network postings, and a host of other persuasive appeals can be created around the theme of “Don’t be a Butthead.” With proper execution, this media campaign may have some positive impact on reducing the enormous number of cigarettes and cigarette filters that flow everyday into Santa Monica Bay and into our oceans.

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## LINKS

Algalita Marine Research Foundation:

<http://www.algalita.org>

<http://www.plasticdebris.org>

California Coastal Commission:

<http://www.coastal.ca.gov>

County of Los Angeles, Department of Public Works Storm Drain Program:

<http://dpw.lacounty.gov/wmd/NPDES/>

[http://dpw.lacounty.gov/wmd/NPDES/table\\_contents.cfm](http://dpw.lacounty.gov/wmd/NPDES/table_contents.cfm)

City of Los Angeles Department of Public Works, Storm Drain Division:  
<http://www.lastormwater.org>

Los Angeles and San Gabriel River Watershed Council:  
<http://lasgrwc2.org>

Los Angeles Region Water Control Board:  
<http://www.waterboards.ca.gov/losangeles>

Ocean Conservancy:  
<http://www.oceanconservancy.org>

Heal The Bay:  
<http://www.healthebay.org>

Time River Laboratory:  
[www.timeriver.net](http://www.timeriver.net)

## APPENDIX ONE: HELPFUL TERMS USED IN SOCIAL TRAP ANALYSIS

In order to create specific interventions, it is very helpful to have a clear understanding of the terminology used in social trap analysis. The following are definitions of some key terms.

**CONSEQUENCES** - Events in a person's lifespace which follow a specific behavior or set of behaviors in a cause-effect relationship. An example of a consequence could be a paycheck, which is a consequence of working in a job. In regard to the present problems in Los Angeles, one consequence of washing your car in your driveway is that the soap products that run off end up in Santa Monica Bay. **SHORT-TERM CONSEQUENCES** are those that occur immediately following a behavior or within a relatively short period of time. It is defined as "relative" because the timeframes of different social traps varies. **LONG-TERM CONSEQUENCES** are events that are delayed from the behaviors that created them. The long-term consequences of the behaviors of a group of people all responding in an ecosystem can accumulate and add together to create a larger social problem. For example, too many people fishing can lead to the long-term consequence of the eventual depletion of the quantity of fish.

**TARGET BEHAVIOR** - A behavior or set of behaviors under examination. In the case of storm sewers, target behaviors include people dumping toxic waste directly into the drains, people allowing garden chemicals and fertilizers to escape the boundaries of their property, landscape gardeners blowing solid wastes into the sewer drains, people dumping paint and other chemicals, or people washing their cars and allowing detergents, polishing compounds, and waxes to flow to the storm drains, or people tossing cigarette butts into the gutter, or the careless disposal of plastic bags, knives, forks, and spoons. In the case of used motor oil, the target behavior is the disposal of the oil and what form of disposal a person chooses. One characteristic of social trap analysis is that target behaviors are identified and analyzed for strategies to change them into more environmentally healthy behaviors.

**RESPONSE COST** - The amount of work required to complete a behavior. In other words, it is the amount of effort required to respond to a problem. In regard to the problem of disposing of used motor oil, the response costs to collect the used oil, transfer it to a sealed container, and drive it to a local collection center are higher than the response costs are for draining the oil from the car directly into the dirt of a vacant lot.

**REINFORCEMENT** - Anything that increases the probability of occurrence of a previous behavior. Reinforcement is said to strengthen a behavior. **POSITIVE REINFORCEMENT** is where an agreeable or pleasurable consequence that follows a behavior increases the likelihood that the behavior will be repeated in the future. **NEGATIVE REINFORCEMENT** is where the removal of a disagreeable or unpleasant consequence that follows a behavior increases the likelihood that the behavior will be repeated in the future.

**PUNISHMENT** - Anything that decreases the probability of occurrence of a previous behavior. Punishment suppresses, but does not eliminate a behavior. Punishment generally is thought to be more aversive and less effective than reinforcement in making permanent changes in behavior. **POSITIVE PUNISHMENT** is where a disagreeable or unpleasant consequence that follows a behavior decreases the likelihood that the behavior will be repeated in the future. **NEGATIVE PUNISHMENT** is where the removal of an agreeable or pleasant consequence that follows a behavior decreases the likelihood that the behavior will be repeated in the future.

**TRAGEDY OF THE COMMONS** (Hardin, 1968) - A pivotal article by Garrett Hardin in *Science* magazine describing the destruction to commonly-held pastureland by overgrazing of livestock by ranchers. The concepts of social traps evolved from Hardin's ideas of the tragedy of the commons. The tragedy of the commons is an example of a social trap, but social traps also include other forms of behaviors, such as situations where resources are not held commonly.

**SOCIAL TRAP** (Platt, 1973; Cross & Guyer, 1980) - A behavioral situation where people responding for short-term gains bring about long-term group losses. Social traps often are analyzed by examining the structure of the short-term and long-term consequences. (See Superimposed Schedules of Reinforcement.)

**INDIVIDUAL TRAP** (Platt, 1973; Cross & Guyer, 1980) - A behavioral situation where a person responding for short-term gains brings about a long-term individual loss. It is similar to a social trap except that the impact of the long-term consequence only affects the one person. Examples of social traps are substance abuse addictions like cigarette smoking, alcoholism, and substance abuse. The individual short-term positive physiological highs of smoking are superimposed with the long-term effects of chronic bronchitis, coronary disease, and lung cancer. An argument could also be made that smoking is a social trap because of the alleged effects of secondary smoke on others in the environment.

**SOCIAL FENCE** (Platt, 1973; Cross & Guyer, 1980) - A situation where the avoidance of behavior by individuals leads to a long-term collective loss. An example of a social fence would be when a mattress falls from a truck onto one lane of a two lane highway. Motorists avoid stopping to get out of their cars and pull the mattress off the road. Instead they back up behind the mattress until a clear spot opens in the opposing traffic lane. The short-term behavior is avoidance of getting out of the car and removing the mattress. The long-term collective loss is that all the motorists get to their destinations later than they would had someone moved the mattress.

**SCHEDULES OF REINFORCEMENT** (Ferster & Skinner, 1957; Skinner, 1938, 1969) - Reinforcement that occurs more than one time can occur at fixed or variable time periods. Or multiple reinforcement can occur following fixed or variable number of responses by a person or animal. These situations can be defined by simple schedules of reinforcement.

### SIMPLE SCHEDULES OF REINFORCEMENT:

**INTERVAL SCHEDULES** - Generally, reinforcement that is delivered on a basis of time are called interval schedules. An example of a fixed interval (FI) schedule would be a person who receives a paycheck once a week. An example of a variable interval (VI) schedule would be a dairy cow that receives a milking about every 12 hours but not exactly every 12 hours.

**RATIO SCHEDULES** - Reinforcement delivered based on the frequency of occurrence of behavior are known as ratio schedules. A fixed ratio (FR) schedule would be where a child is paid twenty-five cents for every five dandelion plants removed from the lawn. An example of a variable ratio (VR) schedule would be a truck driver who is paid based upon the number of miles driven each day.

### CONCURRENT SCHEDULES OF REINFORCEMENT (Catania 1963, Ferster & Skinner, 1959; Herrnstein, 1961)

Concurrent schedules of reinforcement are where a person or animal is presented with the choice between two or more schedules of reinforcement.

### SUPERIMPOSED SCHEDULES OF REINFORCEMENT (Brechner, 1974, 1977, 1978, 1987; Brechner and Linder, 1981)

Superimposed schedules of reinforcement occur when more than one interval and/or ratio schedule are presented to a person or animal simultaneously contingent on the same behavior. **SOCIAL TRAPS** are an example of superimposed schedules of reinforcement. When it comes to complex human behaviors, such as making a choice between four different available jobs, the reinforcement scheduled would be four concurrent superimposed schedules, since each job would have both positive and negative consequences if chosen. By superimposing concurrent schedules many very complex social situations can be constructed (Brechner, 1987).

## APPENDIX TWO

### TV and Radio Spot (Audio Only) for Cigarette Butt Disposal Campaign

(Note: These spots are in the public domain and can be used by anyone to create spots for their local television stations.)

Spot #1 "Young Couple - Don't be a Butthead!" (:30 Sec.)

#### VIDEO

A HANDSOME MAN and a BEAUTIFUL WOMAN are smoking and chatting on the sidewalk outside a restaurant. The man finishes and crushes his cigarette butt under his shoe.

**Sound Effect: Ocean and Seagulls**

Insert shot of mass of cigarette filters collected by volunteers for the bay.

He picks up the cigarette butt and slips it into her cigarette package.

TITLE CARD:

**DON'T BE A BUTTHEAD**  
**For more information, call**  
**1 800 - XXXX**  
**www.XXXXX.com**

#### AUDIO

BEAUTIFUL WOMAN  
Did you know that cigarettes and cigarette butts are the leading source of pollution in the ocean?

HANDSOME MAN  
(Laughing)  
Are you calling me a butthead?

BEAUTIFUL WOMAN  
Yes, I am. If that cigarette butt gets washed or swept down to the storm drains, it'll go directly to the ocean. It takes from about one to fifteen years for the filters to biodegrade.

HANDSOME MAN  
I'm sorry. You're right. I wasn't thinking. Am I still a butthead?

BEAUTIFUL WOMAN  
Not any more.

ANNOUNCER (V.O.)  
Don't be a butthead.  
Store your finished butts  
back in the pack,  
Jack...and Jill.

Spot #2 "Montage - Don't be a Butthead!" (:30 Sec.)

<u>VIDEO</u>	<u>AUDIO</u>
MONTAGE:	
A YOUNG MALE COLLEGE STUDENT talking to his CLASSMATE. The Classmate extinguishes a cigarette in the dirt with his foot.	YOUNG MALE COLLEGE STUDENT Don't be a butthead!
A FAMOUS CELEBRITY (into the camera)	FAMOUS CELEBRITY Don't be a butthead!
A LITTLE KID (into the camera)	LITTLE KID Don't be a butthead!
A FAMOUS MUSICIAN (into the camera)	FAMOUS MUSICIAN Don't be a butthead!
A BEAUTIFUL 20-ish WOMAN (into the camera)	BEAUTIFUL 20-ish WOMAN Don't be a butthead!
A FAMOUS SPORTS FIGURE (into the camera)	FAMOUS SPORTS FIGURE Don't be a butthead!
AN OLDER MARRIED COUPLE (into the camera)	MARRIED COUPLE (in unison) Don't be a butthead!
Back to COLLEGE STUDENT and CLASSMATE	ANNOUNCER (V.O.) Don't be a butthead.
<b><u>Sound Effect: Ocean and Seagulls</u></b>	Cigarettes and filters are the biggest source of trash in the ocean.
Insert shot of mass of cigarette filters collected by volunteers for the bay, followed by porpoises jumping.	CLASSMATE I'm sorry. You're right. I wasn't thinking. Am I still a butthead?
CLASSMATE picks up his butt & put it in his pack.	BEAUTIFUL 20-ish WOMAN (To Classmate) Not any more.
BEAUTIFUL 20-ish WOMAN walks by CLASSMATE.	
TITLE CARD:	ANNOUNCER (V.O.) Don't be a butthead.
<b>DON'T BE A BUTTHEAD</b>	Store your finished butts
<b>For more information, call</b>	back in the pack,
<b>1 800 - XXXX</b>	Jack...and Jill.
<b>www.XXXX.com</b>	

## FIGURES

Figure 1. Runoff Watersheds for Los Angeles

(Source: City of Los Angeles, Department of Public Works, Storm Drain Division)



Figure 2. Production Stills from “The Lifeguard” (PSA) with George Lopez (1995)

The Lifeguard appears like a genie from the storm drain with a dead fish to show neighbors that the substances they are washing down the storm drain harms marine life.

(Source: County of Los Angeles, Department of Public Works)





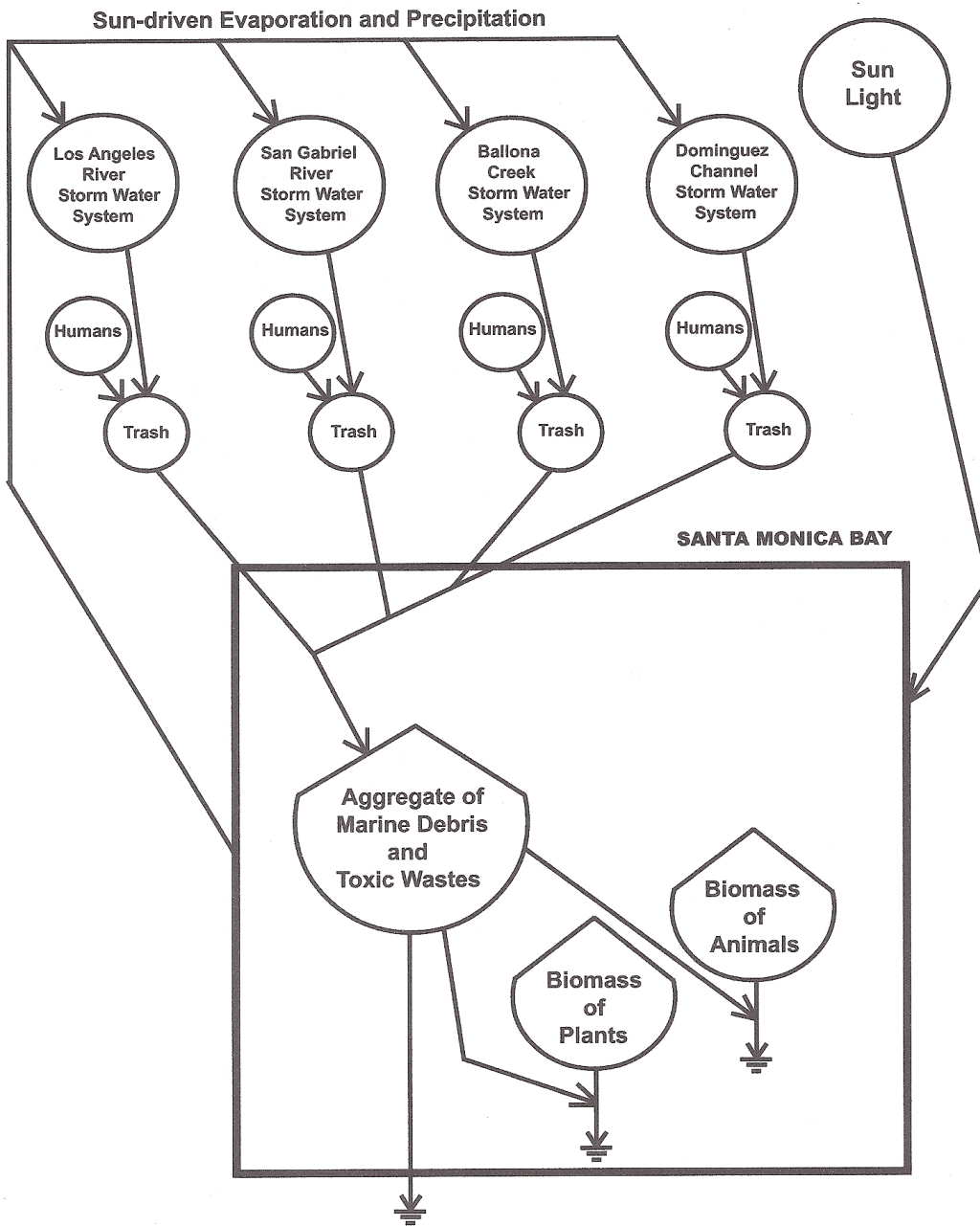


Figure 3. Energy Flow Diagram of Trash Inflow Into Santa Monica Bay Ecosystem. (after Odum and Odum, 1974)