

SUPPORTING STATEMENT
Preliminary Case Study Assessing Economic Benefits of Marine Debris Reduction
Regional Pilot Study
OMB CONTROL NO. 0648-0756

A. JUSTIFICATION

1. Explain the circumstances that make the collection of information necessary.

The National Oceanic and Atmospheric Administration (NOAA) is requesting approval for a revised information collection to conduct a mail survey of households visiting beaches in four coastal locations as part of a Preliminary Case Study Assessing Economic Benefits of Marine Debris Reduction (hereafter referred to as the “Regional Pilot Study”). The four locations include Orange County, CA; Erie and Ottawa counties, OH; Kent and Sussex counties, DE; and Baldwin County, AL. The survey instrument for the Regional Pilot Study will combine a selection of questions from a previous study funded by NOAA titled “Assessing the Economic Benefits of Reductions in Marine Debris: A Pilot Study of Beach Recreation in Orange County, California” (hereafter referred to as the “Orange County Pilot Study”; IEC, 2014, Leggett et al., 2018) with new contingent behavior questions developed specifically for this study. The data from the current survey instrument will be combined with a national model of coastal recreation, which relies on data collected for the *Deepwater Horizon* oil spill assessment (English and McConnell, 2015; English et al., In review), to estimate the economic impacts of marine debris on tourism-dependent communities. The economic impacts to be evaluated include changes in the number of trips, the value of beach recreation to those who visit the beach, and changes in tourism spending (also called regional economic impacts) associated with an increase or decrease in the number of recreational trips.

The [Marine Debris Research, Prevention, and Reduction Act of 2006](#) (hereafter referred to as “the Act”; 33 U.S.C. §§ 1951 et seq.), together with the [Marine Debris Act Amendments of 2012](#), established NOAA’s Marine Debris Program (hereafter referred to as “the Program”) to “identify, determine sources of, assess, prevent, reduce, and remove marine debris and address the adverse impacts of marine debris on the economy of the United States, the marine environment, and navigation safety.” Marine debris is defined as “any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes.” The Act directs the Program to “undertake outreach and education activities for the public and other stakeholders on sources of marine debris...and its adverse impacts on the United States economy....” The Act also directs the Program to “estimate the potential impacts of a severe marine debris event, including economic impacts on...tourism.” The Program also works closely with NOAA’s Damage Assessment Remediation and Restoration Program (DARRP), which requires information on the value of restoration projects related to marine debris removal in the context of natural resource damage assessments under the [Oil Pollution Act](#) (33 U.S.C. §§ 2701 et seq.).

The Program requires information on the impact of marine debris on beach visitors to adequately address the requirements of the Act that are related to the economy and tourism, and to assess the

benefit of restoration projects related to marine debris removal within the context of natural resource damage assessments. In past discussions with state and local governments and organizations, the economic impacts of marine debris and benefits of its removal for communities has been a salient topic but has not been informed by sufficient quantitative research. The need for studies to estimate the economic effects of marine debris has been identified as a priority by both the Program and the communities with which it works. The Program's assistance to NOAA's DARRP would also be enhanced by more specific knowledge about the economic benefits of restoration projects that reduce marine debris on beaches.

The Orange County Pilot Study was a first step toward a more thorough, research-based understanding of the economic effects of marine debris on coastal communities. However, it was limited in several ways, including a single location, a focus on one-day recreation trips, and a focus on the value for recreators without addressing regional economic impacts. The proposed Regional Pilot Study expands the research by evaluating locations on the Atlantic Coast, the Pacific Coast, the Gulf Coast, and the Great Lakes; incorporating multiple-day recreation trips in the study; and estimating both recreation value and regional tourism impacts.

The proposed Regional Pilot Study will allow the Program to communicate more effectively with local communities about how economic questions can be addressed and further, findings from this study have potential implications for local policymakers and resource managers. On the basis of the economic estimates from this study, we will be able to provide data to these tourism-dependent communities to make more informed choices about the utility of more extensive research for any given location or policy decision.

2. Explain how, by whom, how frequently, and for what purpose the information will be used. If the information collected will be disseminated to the public or used to support information that will be disseminated to the public, then explain how the collection complies with all applicable Information Quality Guidelines.

Overview

Currently, very little is known about the effects of marine debris on recreational participation and attitudes toward beach recreation in coastal communities that are facing problems with marine debris. This limits the Program's ability to assess the full economic and social impacts of marine debris on tourism-dependent coastal communities. There is also little known about how people's perceptions of marine debris relate to the frequency and value of recreational trips. The survey instrument will allow the collection of data on public attitudes toward marine debris and anticipated changes in recreational behavior due to marine debris presence.

The survey data will be used by the Program to estimate the economic impacts of marine debris in the four study locations. Data on survey respondents' attitudes toward marine debris and the effect of marine debris on their choice of where and how often they go to the beach will be combined with a national model of recreation choice originally developed for the *Deepwater Horizon* oil spill assessment. NOAA's Marine Debris Monitoring and Assessment Project (MDMAP) of onsite measurements of debris at selected beaches will be used to help characterize current debris levels (Herring, 2018; included in supporting materials). In addition, the survey

data will be used to characterize debris levels as perceived by beach users, and characterize public concern associated with debris presence. The study will estimate the change in the number of visits to the beach and the resulting economic impacts from a variety of potential changes in marine debris on local beaches.

Information quality (objectivity and integrity)

NOAA's Information Quality Guidelines (NOAA, 2014) encompass the utility, objectivity, and integrity of information that is disseminated to the public. The utility of the information was described in the first section.

The objectivity of information relates to its accuracy and reliability, whether the data collection and interpretation relied on established methods, whether materials released to the public have been appropriately reviewed, and whether the results are presented in the appropriate context.

The data from the Regional Pilot Study will include the number of recreation trips taken to beaches in a given community, the value of recreation trips, and the change in the value and number of trips as a result of different marine-debris scenarios. It is important that these results are reliable and accurate. The total number of trips and the value of trips will be estimated using a nationwide model developed for the *Deepwater Horizon* oil spill assessment. The data collection and analysis for the *Deepwater Horizon* model were developed in preparation for litigation by a team of experts in economics, statistics, and survey design. The data collection and analysis plans were also reviewed by outside experts not directly involved in the study design. The data were subject to extensive quality controls, and the model was developed based on a thorough evaluation of the best available methods.

The change in the value and number of trips will be estimated using data collected in the marine debris survey. Specifically, the survey asks people how many more or fewer trips they would take given changes in the amount of marine debris on beaches. The survey also asks people to estimate the current level of debris at beaches with which they are familiar, using a 1-to-5 rating developed using onsite measurements of debris conducted by NOAA at selected beaches in each location (Herring, 2018).

In economic surveys and analyses, one of the best ways to evaluate the accuracy and reliability of results is to perform a cross-validation based on a comparison with alternative methods. We were able to do this by comparing results from an OMB-approved pretest for the Regional Pilot Study conducted in Orange County¹ to results of the previous Orange County Pilot Study (IEC, 2014, Leggett et al., 2018). The pretest survey used "stated preference" methods to ask recreators how they would respond to a change in marine debris. The Orange County Pilot Study used "revealed preference" methods to infer how recreators respond to marine debris by analyzing which beaches they choose to go to and whether the presence of marine debris influences their choices. In the Orange County Pilot Study (revealed-preference), the results indicated that people would respond to a 50% increase in debris levels by reducing the total number of trips they take

¹. Details of the pretest are described in a memorandum to Amy Uhrin and Carlie Herring, National Oceanic and Atmospheric Administration, titled "Draft Pretest Results: Economic Impacts of Marine Debris on Tourism-Dependent Communities," dated March 21, 2018.

by 6.1% (IEc, 2014; Leggett et al., 2018). The pretest results for the Regional Pilot Study (stated-preference), when combined with the *Deepwater Horizon* recreation model, indicate that the same scenario would result in a 7.2% decrease in trips. Other scenarios could also be analyzed, and the two models would again produce similar results. This consistency between results for stated-preference and revealed-preference studies is a good indication that both methods are obtaining reliable and accurate information.

The Regional Pilot Study also asks people to estimate the amount of debris on beaches. The analysis will not directly rely on the results of this information. For example, an accurate estimate of the loss from a doubling of debris does not require estimates of the initial level of debris, and beachgoers who avoid beaches with debris are usually responding to their perceptions rather than to any specific knowledge of debris levels. However, to put economic values in context, it is helpful to quantify people's perceptions of debris and to evaluate how well their perceptions reflect actual debris amounts.

The previous Orange County Pilot Study provides valuable corroborating evidence that beachgoers are able to recall and report debris levels at beaches sufficiently well to inform marine debris research. The study asked people to rate marine debris at beaches using a 1-to-5 scale. These ratings were then included as a characteristic of beaches in the study's revealed-preference model. The model's estimate of the effect of a respondent's recollection of marine debris levels on the value of a recreation trip in Orange County was a decline in value of \$6.26 per trip (IEc, 2014; Leggett et al., 2018).

The Orange County Pilot Study also calculated the effect of marine debris levels using measured marine debris levels rather than a respondent's recollection of marine debris levels. The corresponding decline in per-trip value was \$5.45 (IEc, 2014; Leggett et al., 2018). The results of the impacts of marine debris using recalled and measured marine debris levels are qualitatively and statistically similar, indicating that people's perceptions of debris provide reliable information about relative debris levels at different beaches.²

The debris ratings in the current Regional Pilot Study use the same 1-to-5 rating scale that was used in the Orange County Pilot Study, but now include pictures of debris on beaches to assist respondents when applying ratings to beaches. The Orange County Pilot Study found a 0.34 correlation between the debris ratings and the onsite measurements (IEc, 2014; Leggett et al., 2018). In the OMB-approved pretest for the Regional Pilot Study, we found a 0.47 correlation between ratings from respondents and the onsite measurements from the Orange County Pilot Study. This preliminary evidence suggests that the pictures may improve respondents' abilities to provide accurate ratings for beaches with which they are familiar. Using the pictures in the Regional Pilot Study to convert respondent ratings to actual measurements of the quantity of debris per square meter, we find that the ratings imply debris amounts about half as large as the onsite measurements. As noted, we do not intend to interpret the ratings as quantitative estimates of debris levels, but as a way of characterizing how current debris levels

². Dollar amounts were calculated by dividing the coefficients for debris measures 1 and 5 (IEc, 2014, page 36) by the coefficient on travel cost for model 2 (IEc, 2014, page 35), and multiplying by the average level of debris measure 1 (IEc, 2014, page 16) and the average level of debris measure 2 (Chris Leggett, RSG Inc., personal communication, 4/27/2018).

are perceived by beachgoers. In the Regional Pilot Study, we have onsite measurements of debris for selected beaches in each of the proposed study areas (Herring, 2018). These measurements will assist in interpreting the debris ratings in the appropriate context.

Additional evidence from the Regional Pilot Study pretest suggests that respondents found the survey questions to be clear. According to probing questions included in the pretest, 71.4% of respondents indicated the pictures of debris were a good or somewhat good representation of the types of debris they have seen on Orange County beaches. The most important factor for estimating quantities of debris is the amount of debris found in a given area. Results showed that 89.8% of respondents indicated that the description of the area used to estimate debris levels was clear or somewhat clear, and 83.7% of respondents thought the amount of debris shown in the pictures was accurate or somewhat accurate for the beaches with which they are familiar.

Regarding the effect of debris on recreation trips, 89.8% of respondents were either confident or somewhat confident about reporting any change in the number of trips they would take if there were almost no debris, and 81.6% of respondents were either confident or somewhat confident about any change in the number of trips they would take if there were twice as much debris. It is possible that questions about the effect of debris are most difficult for those reporting a change in their trips, as opposed to answering that their trips would stay the same. Among the cases where respondents reported a change, 75% of respondents were confident or somewhat confident in their answer.

An internal scope test was performed using data from the Regional Pilot Study pretest. The scope test indicates that people have a lower value for a smaller change in levels of marine debris. The average debris rating was 2.0, which is equivalent to 2 pieces of debris per 500 square feet (or 0.04 pieces per square meter). The two contingent behavior scenarios involve a reduction to almost no debris, defined as 1 piece of debris per 500 square feet; and a doubling of debris, leading to an average of 4 pieces of debris per 500 square feet. The hypothetical reduction in debris is therefore half as great as the hypothetical increase in debris. Consistent with these scenarios, the increase in trips of 4.0% from a decline in debris is smaller than the decrease in trips of 14.0% from an increase in debris. The confidence intervals are 3.4% to 5.5% and 13.4% to 16.4%, respectively.

The change in the number of trips people take, and the initial number of trips under current conditions, are elicited from respondents for a full-year reporting period. Some studies have found that recall periods of greater than three months may lead respondents to overstate the total number of trips they take (Chu et al., 1992). We note that for the Regional Pilot Study, the total number of trips will come from the *Deepwater Horizon* model, which used aerial photography and other onsite measurements to calculate the number of trips (Tourangeau et al., 2017). The evidence above suggests that people are accurately reporting their change in trips when calculated as a percentage, the key result from the Regional Pilot Study pretest (the study design does not allow us to calculate total trips in this study). The advantage of using a full-year reporting period is that the type of trips people take could differ at different times of the year. For example, local residents who jog at the beach throughout the year may be less concerned about marine debris than people who take vacations at the beach for swimming and sunbathing. This

means that data covering the full year are likely to be more accurate for estimating economic effects. However, we can limit the survey to the three-month period of June through August if that is preferred.

We will use a logit travel-cost model and a regional economic impacts model to analyze the data. Both of these models represent the most commonly accepted methods for estimating changes in economic value and impacts from environmental factors affecting recreation. The travel-cost model was originally developed for the *Deepwater Horizon* natural resource damage assessment and relied on the best available methods as determined by the team of economists working on that case (English et al., In review). The regional economic model relies on Regional Input-Output Modeling System (RIMS II) multipliers, which are widely used for regional economic analyses (Bess and Ambargis, 2011).

All data from the Regional Pilot Study survey will be subject to double data entry for quality control purposes. The report for the Regional Pilot Study and any publications in the academic literature will describe the methods in sufficient detail to be reproduced by other researchers. Assumptions will be thoroughly described so researchers can evaluate results in the appropriate context. There will be an internal review by economists and scientists at NOAA of all methods and any documents to be released to the public. Dr. George Parsons at the University of Delaware has been involved throughout the study serving as an external reviewer for most aspects of the study.

The integrity of the information relates to computer security and assurances that the data are not compromised in any way. Following NOAA's Information Quality Guidelines, the data will be safeguarded from improper access, modification, or destruction. Specifically, the data will be safeguarded in the same way as the Regional Pilot Study pretest data: the onsite survey data will be collected on secure tablets provided by NOAA's Information Technology (IT) department and comply with all security standards. To provide additional controls for private data, respondents' names and addresses will be removed from the original dataset (with a unique identification linking them to the original record). Specifically, names and addresses will be uploaded from the tablets directly onto a secure laptop computer provided by NOAA's IT department, and will comply with all security standards. As an additional security measure, the laptop computer will have its internet connectivity disabled. The names and addresses will be printed directly from the secure laptop computer to hard copy letters, envelopes, and postcards; the laptop will be connected to the printer with a physical cord. The names and addresses will be deleted once the mailing is complete.

Once personally identifiable information has been removed, the remaining data will be uploaded and stored on Abt Associates' (Abt's) secure network environment. Abt complies with the Privacy Act of 1974, the Health Insurance Portability and Accountability Act of 1996 (HIPAA), and the E-Government Act of 2002, including Title III: Federal Information Security Management Act (FISMA). Abt has also successfully complied with client requirements for a System of Records Notice (SORN) and a Privacy Impact Assessment (PIA). The mail survey data will be sent to Market Strategies International, a research and consulting partner. Market Strategies undergoes annual SOC2 Type II auditing, third-party external penetration testing, Health Information Trust Alliance (HITRUST) certification, and International Standards

Organization (ISO) 20252 certification. Documentation of these audits and certifications are available to our clients upon request.

Background

Marine debris is widely acknowledged to be a persistent problem in many coastal areas of the United States. There are a variety of potential economic losses associated with marine debris, including costs incurred by local governments and volunteer organizations to remove and dispose of marine debris, impacts on the tourism industry due to changes in the number of visitors, effects on waterfront property values due to diminished aesthetic appeal, impacts on the value of recreation to beach visitors, and potential effects on recreational and commercial fisheries.

Existing studies suggest that beach litter detracts from tourists' beach enjoyment and, as a result, reduces the recreational value of coastal beaches (Ofiara and Brown, 1999; Brouwer et al., 2017; Krelling et al., 2017). Marine debris potentially also creates significant economic costs by reducing the probability of returning to the same location, particularly among first-time visitors (Ballance et al., 2000; Schuhmann, 2012). Beach visitors are likely to be concerned about marine debris both because it poses potential physical harm due to cuts or bacterial infections and because it may detract from the perceived natural beauty of an area. In contrast to debris or litter along the roadside or in parks, there is a high potential for dermal contact with marine debris on beaches as visitors frequently go barefoot, lie directly on the sand, and dig in the sand. The existence of numerous volunteer efforts to remove debris from beaches, the willingness of visitors to participate in beach clean-up, and the fact that many municipalities regularly rake beaches to remove debris are probable indications that beach visitors prefer cleaner beaches (Brouwer et al., 2017).

Details and purpose of information collection

The Regional Pilot Study will provide an important contribution to the literature on the economic value of changes in marine debris on U.S. beaches. Building on the Orange County Pilot Study (IEc, 2014; Leggett et al., 2018), the study of debris impacts at four locations nationwide (Table 1) will be the first attempt to link beach trip choices with estimates of marine debris at beaches. While Parsons et al. (2009) included indicators of beach cleaning activities in an economic model for Texas Gulf Coast beaches, they did not base their analysis on the amount of debris at beaches. Other recent beach recreation models have addressed a variety of beach attributes but did not include marine debris, such as the Southern California beach model (Hanemann et al., 2004); a model of visits to New Jersey, Delaware, and Maryland beaches (Parsons and Massey, 2003); and a model focused on visits to San Diego County beaches (Lew and Larson, 2005). Some studies have addressed other timely and important issues for beach communities, such as the development of offshore wind turbines in North Carolina (Landry et al., 2012) or the potential impact of climate change in Southern California (Pendleton et al., 2011). We are aware of one study that investigated the value of debris removal, but it presented only hypothetical debris levels and was not applied to specific beaches and actual debris levels (Smith et al., 1997). Thus, while the literature has demonstrated the importance of beach characteristics and amenities on the economic value of beach recreation, the economic impact of

changes in debris at U.S. beaches has not been investigated. The results of the Regional Pilot Study will be used to evaluate the significance of economic impacts associated with marine debris, and the need for potential further research in selected communities or regions, or nationwide.

Table 1. Study areas and included counties

Study area	Counties in study area
Great Lakes	Erie and Ottawa counties, OH
East Coast	Kent and Sussex counties, DE
Gulf of Mexico	Baldwin County, AL
West Coast	Orange County, CA

The primary research goal of the Regional Pilot Study is to use contingent behavior questions to estimate the impact of marine debris on the number of trips people take to beaches in each study area. These contingent behavior questions will ask respondents to estimate how changes in marine debris levels would affect the number of trips they take to beaches in a given area. The impact on trips will be used as input to a nationwide model of beach visitation developed for the *Deepwater Horizon* oil spill assessment, conducted by NOAA and other State and Federal agencies. The model is important because it incorporates data on recreation trips from throughout the United States to derive the value of recreation trips and to estimate the degree to which people substitute one location to another when beach quality in a particular area changes. The results of the study will be compared to the Orange County Pilot Study to evaluate the consistency of the contingent behavior results with results of an important alternative method (the “revealed preference” method) for evaluating impacts to recreation and the value from changes in beach quality.

The Regional Pilot Study will also expand results from the Orange County Pilot Study to communities nationwide by addressing a variety of qualitative issues, including:

- What specific types of marine debris have the greatest impact on beach choices (e.g., plastic, metal, glass)?
- What do beachgoers know about the sources of marine debris on beaches?
- Does the impact of marine debris on beach choice vary in a systematic way across respondents (e.g., if visitors with children are more sensitive to marine debris levels)?
- What is the relationship between respondents’ perceptions of marine debris and actual marine debris levels?
- How important is marine debris relative to other beach attributes about which people care?

The current data collection effort will consist of two steps: a short onsite intercept survey of beachgoers and a primary mail survey.

The onsite intercept survey will ensure that the sample includes only respondents who visit beaches in the study location. The onsite sampling will involve intercepting people at multiple beaches in each study location. The beaches will be selected to represent the various types of beach experiences available, including more- and less-developed beaches. The target responding sample size is 100 completed household surveys in each study location. We assume a response rate of 35% to the mail portion of the survey, which is the typical response rate for onsite surveys with mail follow-up (Millar and Dillman, 2011; Lynn, 2013; Dillman et al., 2014). This means that an initial sample of 286 respondent addresses must be obtained onsite to reach the target of 100 completed surveys.

The onsite survey will involve approaching people at each sampled beach and asking them to participate in the survey. Onsite interviewers will be assigned to multiple beaches within each study location. Interviewers will administer intercept surveys on two separate days during the high-volume beach season (approximately June to August 2018). The two days will consist of both a weekend day and a weekday to create a sample frame that will consist of a variety of beachgoers (day-trippers and vacationers). Onsite staff will start on one side of the target beach and work their way to the opposite side, approaching each party to request participation in the intercept survey by one member of the party. Interviewers will be provided with informational material to share with respondents to provide background information and credibility for the study. The goal of the intercept survey is to recruit participants for a follow-up mail survey and gather information about respondents for use in a mail-survey nonresponse adjustment.

For those willing to take the mail survey, a brief onsite interview will ask the respondent's name and mailing address; several demographic questions such as age and education; and several attitudinal questions about beach characteristics, including marine debris. Those who do not agree to participate in the mail survey will not be asked their name or address, but will be asked their ZIP code and all the other questions in the onsite survey. Appendix A provides a copy of the onsite interview form.

Data collected during onsite interviews will be used to evaluate nonresponse bias. A nonresponse study will compare demographic variables and attitudinal questions for three sampling groups, including those who refuse to participate in the mail survey but are willing to answer the several questions onsite (including demographic questions), those who initially agree to the mail survey but later fail to return it, and those who complete the mail survey. Those who refuse the onsite survey will be asked their age, and their gender will be recorded, so that this group can also be compared to the other groups with respect to age and gender.

The primary survey will be implemented by mail (Millar and Dillman, 2011; Lynn, 2013; Dillman et al., 2014). The target date for mailing the surveys is September 2018. The primary mail survey will include questions that focus on the number of day and overnight trips to beaches in each target region, respondents' attitudes toward marine debris, the presence of marine debris at beaches, and demographic characteristics (see below for a description of each survey question). The respondent will be asked to indicate the specific beach(es) that he or she visited in the previous 12 months (from September 1, 2017 to August 31, 2018), and the number of day

and overnight trips taken. The respondent will also be asked whether and how changes in marine debris levels would affect her or his visitation of the local beaches.

The implementation sequence for the mail survey will be as follows:

- **Day 1:** The primary mail survey will be mailed to all sampled households via first-class mail. The survey instrument will include an introductory letter informing respondents about the survey and encouraging their participation by a specific date. The initial packet will also include a questionnaire and a self-addressed, postage-paid return envelope.
- **Day 7:** A thank you/reminder postcard will be mailed to all sampled households thanking them for responding and encouraging them to complete the survey if they have not already.
- **Day 14:** Another thank you/reminder email will be sent to all sampled households who have not yet responded to encourage their survey completion, and provide them with information to request another copy of the survey if it has been lost or misplaced.
- **Day 21:** A replacement survey instrument will be sent to all sampled households who have not yet responded via first class mail. The replacement survey will include a letter with a final reminder to complete the survey, a second questionnaire, and a postage-paid return envelope.

The content and specific purpose of each question is described below.

Primary mail survey

The survey questions, and the purpose of each question, are described below.

- **Familiarity with local beaches.** Question 1 will ask respondents to review a map and list of local beaches and indicate the beaches with which they are familiar. This will remind respondents of local area beaches and make respondents aware of the beaches we will be asking about in subsequent questions about trips and debris levels.
- **Number of trips.** Questions 2 and 3 will ask respondents about the total number of their single- and multiple-day trips during the previous year to all beaches in the study area. Respondents' total number of trips throughout the year will be used as the baseline to which changes in trips, estimated in later questions, are compared. Single- and multiple-day trips involve different expenditures, and the breakout into these two categories will be used in the analysis that estimates benefits to the regional economy.
- **Importance of beach attributes.** Question 4 will ask respondents about the importance of 13 attributes when choosing which beaches to visit. This will support the interpretation of contingent behavior results by allowing a comparison of the importance respondents place on marine debris to their reported behavioral responses to changes in marine debris. The question may also encourage respondents to think carefully about how they respond to

marine debris relative to other beach characteristics when answering the contingent behavior questions.

- **Marine debris levels.** Question 5 will ask respondents to report which beaches they visited over the last beach season and to rate the level of marine debris they encountered at each beach by comparing the debris they encountered to photographs of debris provided in the survey. The debris ratings will be used to supplement onsite marine debris measurements (Herring, 2018) and develop a more complete evaluation of the level of debris at beaches throughout each coastal community. To specify the size of the beach area respondents are asked to evaluate, the survey includes an oblique-angle photograph that represents the perspective from which beachgoers would view a beach during their visit. This is preferable to a plan-view aerial image, which is a perspective few beachgoers have seen. In one-on-one interviews, respondents indicated they understood the size of the area depicted in the photograph. Similarly, in the mail-survey pretest, 90% of respondents said the description of the area – which included the pictures – was clear. The debris photographs that were included in the survey are representative of common items found on beaches in the United States, based on a NOAA database of volunteer monitoring (Herring, 2018).
- **Contingent behavior questions.** Contingent behavior is a “stated preference” method in which respondents indicate how their recreation choices would change given hypothetical changes in recreation options. Questions 6 and 7 will ask whether respondents would change the number of trips they would take to the study area under two hypothetical scenarios: (1) “If there had been almost no garbage or manmade debris at beaches” and (2) “If there had been twice as much garbage or manmade debris at beaches.” These questions will allow us to estimate changes in the number of beach trips associated with increases or decreases in marine debris in different target communities.
- **Public attitude toward marine debris.** Questions 8 through 12 will ask whether respondents are concerned about the presence of various types of garbage or manmade debris on the sand or in the surf while visiting a beach, the types of debris they have actually seen on beaches, their understanding of the sources of debris found on beaches, and whether they have participated in beach cleanup efforts. These questions were part of the Orange County Pilot Study and will continue to be helpful as context for evaluating marine debris policies in coordination with coastal communities.
- **Demographic characteristics.** Questions 13 through 19 will ask respondents to report the number of adults and children in their household; and their gender, age, ethnicity, race, education level, and income. These questions will be used in the nonresponse analysis and may also be used to investigate the relationship between the response to changes in marine debris levels and demographic characteristics.

The Program will retain control over the information and safeguard it from improper access, modification, and destruction, consistent with NOAA standards for confidentiality, privacy, and electronic information. See the response to Question 10 of this Supporting Statement for more

information on confidentiality and privacy. The information collection is designed to yield data that meet all applicable information quality guidelines.

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological techniques or other forms of information technology.

Data for the onsite intercept survey will be collected via secured computerized tablets. The tablets will electronically collect the participant contact data and transmit information to our study contact database. Interviewers will administer the survey questions to respondents and enter data directly into the tablet interface. Data entered into the tablet will be securely stored in our contact database. Only authorized study personnel will have access to the secure tablets and information will not be shared or disclosed for any reason.

Data will be collected via a mail survey using mailing addresses collected via an onsite intercept survey. The data collection effort will not use automated, electronic, mechanical, or other technological techniques or other forms of IT.

4. Describe efforts to identify duplication.

A review of the literature did not identify any existing research on the economic impact of marine debris on beach visitors and local economies in the United States. While Parsons et al. (2009) included “manual cleaning” and “machine cleaning” variables in an economic model focused on Texas Gulf Coast beaches, they did not evaluate the amount of debris at beaches. The study also focused on day trips by Texas residents only, which limits its application to the estimation of economic impacts on other tourism-dependent communities. Other beach recreation models do not include any measure of marine debris at all, including the Southern California beach model (Hanemann et al., 2004), a model focused on visits to New Jersey, Delaware, and Maryland beaches (Parsons and Massey, 2003); and a model focused on visits to San Diego County beaches (Lew and Larson, 2005). Although the Pilot Study of Beach Recreation in Orange County (IEc, 2014) allows the estimation of welfare effects to beachgoers from changes in marine debris levels, the study focused on single-day trips only.

5. If the collection of information involves small businesses or other small entities, describe the methods used to minimize burden.

The proposed information collection will focus on households and will not affect small businesses or other small entities.

6. Describe the consequences to the Federal program or policy activities if the collection is not conducted or is conducted less frequently.

If the information collection is not conducted, the Program will have difficulty moving forward with a research program aimed at advancing our knowledge concerning the economic impacts of marine debris on the U.S. economy. The study is a necessary step toward this goal as it allows

the Program to extend the results of the prior Orange County Pilot Study (IEc, 2014; Leggett et al., 2018).

7. Explain any special circumstances that require the collection to be conducted in a manner inconsistent with OMB guidelines.

The proposed information collection will be conducted in a manner that is consistent with the Office of Management and Budget (OMB) guidelines.

8. Provide information on the PRA Federal Register Notice that solicited public comments on the information collection prior to this submission. Summarize the public comments received in response to that notice and describe the actions taken by the agency in response to those comments. Describe the efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.

A Federal Register Notice published on February 22, 2017 (FR Doc. 2017-03433) solicited public comment. Only two comments were received by the Program. Because these were outside the scope of study for this work, no response was required.

9. Explain any decisions to provide payments or gifts to respondents, other than remuneration of contractors or grantees.

No monetary incentives will be offered to survey respondents.

10. Describe any assurance of confidentiality provided to respondents and the basis for assurance in statute, regulation, or agency policy.

NOAA will not collect any identifying information about survey respondents other than name and household address. Only ZIP code and state will be included in the data; names and street addresses will be used only during the mail administration of the survey and will not be included in the survey data.

The survey materials will include a statement that the respondent's name and street address will be removed from NOAA's database after NOAA receives the completed questionnaire, or after two months. In addition, the survey materials will state that all information provided "will remain confidential to the extent permitted by law." No other confidentiality assurances will be provided to the respondent.

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private.

No questions of a sensitive nature will be asked.

12. Provide an estimate in hours of the burden of the collection of information.

The proposed collection involves two one-time surveys, an onsite intercept survey and the primary mail survey, plus a non-response follow-up study.

- **Onsite intercept survey:** We will intercept potential respondents at beaches in each study area and ask them to complete a short onsite survey. The onsite intercept survey will include demographic questions, attitudinal questions about marine debris, and questions about participation in single or multiple-day trips. The last question will ask respondents if they would be willing to participate in a future mail survey. For those who agree to participate in the mail survey, we will ask for their name and mailing address. For those who do not agree to participate in the mail survey, we will record their ZIP code instead of their name and mailing address. To achieve a target sample of 400 completed mail surveys (100 in each of 4 study areas), we will need to approach 3,432 potential respondents to obtain 1,144 addresses for the mail survey. This estimate is based on a 33% participation rate among those approached for the onsite survey and a 35% response rate for the mail survey. We also assume that 33% of those approached for the onsite survey complete the onsite portion but refuse the mail portion.
- **Primary mail survey:** We will mail the primary survey to the 1,144 onsite intercept survey respondents who agree to participate in the mail survey. Assuming a 35% response rate to the mail survey, we expect to receive 400 completed surveys. For the remaining 744 nonrespondents, we will have some demographic and beach visitation data from the onsite survey.
- **Non-respondent follow-up study:** We will use information collected during onsite interviews (including people who did not wish to participate in the survey and those who agreed initially but did not return the mail survey) to conduct a nonresponse study.

Based on pre-tests, we assume that each respondent will spend 4 minutes completing the onsite survey if they provide their full mailing and email address and 3 minutes completing the onsite intercept survey if they decline participating in the mail survey. We also conservatively include 1 minute of survey time for onsite nonrespondents, who will be briefly asked to provide their age if they are willing. The primary mail survey will require approximately 10 minutes to complete. Thus, we estimate the total burden of this collection to be 219 hours (Table 2). This is a one-time data collection effort, so there will be no additional costs expected for respondents.

Table 2. Total estimated burden

Survey	Responses	Completion time	Burden hours
Single question (age) for onsite refusals	1,144	1 minute	19
Onsite intercept survey (decline mail survey)	1,144	3 minutes	57
Onsite intercept survey (agree to mail survey)	1,144	4 minutes	76
Primary mail survey	400	10 minutes	67
Total			219

Table 3 reports mean hourly wages for each of the four study areas (BLS, 2017). Multiplying the burden hours for each region by the mean hourly wage yields a total labor cost of \$4,599.

Table 3. Total estimated labor cost for completing the onsite intercept survey and the primary mail survey

Study area	Expected number of onsite survey refusals	Expected number of onsite survey respondents without address	Expected number of onsite survey respondents with address (and survey mailings) ^a	Expected number of mail-survey completes	Total burden hours ^b	Dollar value per burden hour	Total labor cost ^c
Great Lakes	286	286	286	100	55	\$19.31	\$1,057
East Coast	286	286	286	100	55	\$20.09	\$1,100
Gulf of Mexico	286	286	286	100	55	\$17.36	\$951
West Coast	286	286	286	100	55	\$27.22	\$1,491
Total	1,144	1,144	1,144	400	220		\$4,599

a. Surveys will be mailed to those who complete the onsite intercept survey and agree to participate in the mail survey (provided mailing addresses).

b. Based on 1 minute per onsite refusal, 3 minutes per onsite interview without address, 4 minutes per onsite interview with address, and 10 minutes per completed mail survey.

c. Totals may not sum due to rounding.

13. Provide an estimate of the total annual cost burden to the respondents or record-keepers resulting from the collection (excluding the value of the burden hours in Question 12 above).

There will be no recordkeeping or reporting costs resulting from the data collection effort. The mail survey packages will include postage-paid envelopes.

14. Provide estimates of annualized cost to the Federal government.

The total annualized cost to the Federal Government is \$342,087.40. This total cost is comprised of two components:

- Operational expenses:** All operational costs will be incurred by the contractor, Abt. The contract with Abt is for \$335,105, which includes the survey design and testing, survey implementation, data analysis (including estimating economic impacts on local communities), and reporting.
- Labor costs for staff:** The estimated time required for Program staff to oversee the information collection is 80 hours at a Series and Grade of Environmental Scientist, ZP-0401-04, and an hourly rate of \$87.28 (including benefits), resulting in total labor costs for staff of \$6,982.40.

Total: \$342, 087.40.

15. Explain the reasons for any program changes or adjustments.

This is a revision, replacing the initial pretest with a survey in 4 locations.

16. For collections whose results will be published, outline the plans for tabulation and publication.

Statistical summaries of responses to all survey questions will be developed, including the mean, minimum, maximum, and standard deviation for questions with numerical responses; and response frequencies for questions with categorical response options. In addition, responses related to changes in beach visits will be analyzed within the context of an economic model. This will include an estimate of changes in the value of recreation and impacts to the regional economies for the four communities, as described in detail in Part B of this supporting statement.

The overall schedule for the study is as follows:

- Conduct intercept surveys June–August 2018
- Print and coordinate survey materials September 2018
- Implement mail survey September–October 2018
- Analyze results and develop report October–December 2018

The project report will be posted online on the Program website (<http://marinedebris/noaa.gov>) in pdf format.

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons why display would be inappropriate.

The expiration date for OMB approval will be displayed on all surveys associated with this information collection.

18. Explain each exception to the certification statement.

There are no exceptions to the certification statement.