

**CALIFORNIA DEPARTMENT OF FISH AND GAME
INSTREAM FLOW PROGRAM**

**ANNUAL REPORT
2010**



**California Department of Fish and Game
Water Branch, Instream Flow Program
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Instream Flow Program Annual Report 2010

Preface

The primary objective of the Department's Instream Flow Program is to develop scientific information on the relationships between flow and available stream habitat to determine what flows are needed to maintain healthy conditions for fish and wildlife. Relationships between flow and habitat will be developed on the selected streams for each species' critical lifestage need, including spawning, rearing and migration. The Department has interest in assuring that water flows within streams are maintained at levels which are adequate for long-term protection, maintenance and proper stewardship of those resources.

This annual report outlines the activities of the Department in 2010 to implement Public Resources Code sections 10000-10005 through the Department's Instream Flow Program, followed by a general workplan for 2011.

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I. PROGRAM ELEMENTS

In calendar year 2010, The Department's Instream Flow Program included the following program elements and activities related to instream flow:

Instream Flow Program Web Site

The Department maintained a public internet web site for the Instream Flow Program in 2010. The web site contains links to instream flow reports and documents including annual reports, workplans, study plans, the priority streams list, flow recommendations, and historical flow studies. The web address is: http://www.dfg.ca.gov/water/instream_flow_docs.html

Instream Flow Incremental Methodology (IFIM) Training

The Department hosted an Instream Flow Incremental Methodology (IFIM) training for Department staff in April 2010. IFIM is a process used for developing instream flow prescriptions for protection of fish and wildlife. The training was designed to be consistent with the Department's policy of using the IFIM approach for assessing the relationship between stream flows and aquatic habitat. A primary benefit of using the IFIM approach is data defensibility, a necessary foundation for fulfilling the Department's interest in assuring that water flows within streams are maintained at levels which are adequate for long-term protection, maintenance and proper stewardship of fish and wildlife resources.

The IFIM training was attended by 24 Department staff from throughout the State. Staff were trained on the theory and concepts of IFIM and of traditional 1D (one dimension) Physical Habitat Simulation (PHABSIM) and 2D (two dimension) habitat simulation models. Staff also learned how to derive physical habitat indexes and properly use aquatic habitat suitability criteria. The technical science-based instruction also included proper data assessment and data quality procedures, critical components of the IFIM approach and data defensibility. Tom Payne from Thomas R. Payne and Associates (TRPA) Fisheries Consultants (Arcata, CA), with assistance from Stacy Li (retired NOAA), conducted the IFIM training.

Staff also received instruction on use of the Riverine Habitat Simulation (RHABSIM) model using the field data they collected from a local salmonid stream the day prior. Instruction included data entry for the 1D RHABSIM model, calibration of the hydraulic model, computation of physical habitat indexes, data interpretation and time series analysis. Many Department staff working on stream flow issues may be faced with reviewing, commenting, and making decisions related to local stream flow projects in their regions. The training provided valuable instruction useful for staff that come from a variety of programs and from different levels of involvement on stream flow issues. A portion of the training

was also dedicated to using the IFIM approach to develop flow recommendations for protection of fish and wildlife.

Priority Streams for Instream Flow Assessment

The Department's priority stream list contains a ranked list of streams and watercourses identified throughout the state for which minimum flow levels need to be established. The Department developed the list of 22 priority streams or watercourses for future instream flow work pursuant to Public Resources Code (PRC) 10004 in 2008. This list was compiled and ranked based on input from Regional Department staff, staff from the State Water Resources Control Board (SWRCB), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS). In developing the ranking, Department staff considered criteria such as 1) presence of coho or other anadromous species; 2) likelihood that the Department flow recommendations would provide a high level of improvement; 3) availability of recent flow studies or other relevant data; and 4) the possibility of partners/willing landowners.

The Department continued to use the priority streams list developed in 2008 for prioritizing flow related efforts and did not revise the list in 2010.

Coordination of Instream Flow Efforts

The Department coordinated instream flow efforts in 2010 with the Department's Regions, the SWRCB, scientists, and interested parties. Coordination efforts included informal public meetings with purposes that included: to exchange information and solicit input; to engage interested parties in study design and development, and obtain comments on study progress and results; to maintain dialogue throughout the instream flow study process and during important decision making steps; to build trust in the underlying science and performance of the studies so that study results are considered valid, credible, and usable; to understand roles and responsibilities from all interested parties; to understand needs of data users; and to explore ways to complement existing efforts and leverage funds.

The Department developed and participated on multiple technical project teams in 2010 to review existing data, identify data gaps in existing information, and to develop recommendations for future instream flow need assessments. Technical project teams met in 2010 to discuss, review, and plan instream flow efforts on the Big Sur River in Monterey County, the Santa Maria River in Santa Barbara County, and the Shasta River in Shasta County. Technical project teams are stream- or water course- specific and consist of Department staff from various offices including the Water Branch, Engineering Branch, and Fisheries Branch in Sacramento, and Regional office staff.

Partnership with SWRCB

The Department continued to maintain a partnership with SWRCB in 2010 for purposes of harmonizing priority setting, study availability, and data evaluation. The Department provided input to SWRCB for the development of SWRCB's prioritized schedule and estimate of costs to complete instream flow studies for the Sacramento San Joaquin River Delta tributaries, and major rivers and streams outside the Sacramento River Watershed, pursuant to Section 85087 of the Water Code.

The Department also participated in coordination meetings and proceedings with SWRCB to address Senate Bill 1 (SB1), which contains the Delta Reform Act, establishing the Delta Stewardship Council, and requiring development of a comprehensive management plan for the Delta (Delta Plan). The Delta Plan is due in January 2012. The Department worked with SWRCB to fulfill SB1 requirements, and ultimately to identify quantifiable biological objectives and flow criteria for the species of concern in the Sacramento San Joaquin River Delta¹. The Department's report represented a current understanding of the needs of the individual species in light of current conditions and the objectives described. In August 2010 SWRCB adopted an SWRCB staff report identifying flow criteria for the Delta ecosystem. The SWRCB report was developed largely based upon unimpaired flows and the historical Delta inflows that supported more desirable ecological conditions.

Identification and Evaluation of Instream Flow Data

The Department continued to seek recently completed or ongoing instream flow studies that could possibly be used to develop stream flow recommendations. The Department also identified nearly completed flow study reports produced under the Central Valley Project Improvement Act (CVPIA) Instream Flow Investigations by the USFWS. The USFWS intends to release reports on the Yuba River and Clear Creek in 2011. The purpose of the USFWS reports is to provide scientific information to the U.S. Fish and Wildlife Service's CVPIA program to assist in determining instream flow needs for Central Valley streams. In 2009 the Department evaluated a flow study report on Butte Creek by the USFWS and used the information and data to develop stream flow recommendations for Butte Creek.

Instream Flow Recommendations to SWRCB

Since creation of the Department's Instream Flow Program in 2008, the Department committed to develop and transmit one flow recommendation to the SWRCB by 2010, and on average, to develop and transmit one flow

¹ Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta. California Department of Fish and Game, Water Branch. November, 2010. 169 pp.

recommendation, to the extent funds are available, per year after 2010. In May 2009 the Department transmitted flow recommendations for Butte Creek to SWRCB for consideration as set forth in section 1257.5 of the Water Code (DFG, 2009; Figure 1). The flow recommendations report, which may be accessed on the Department's Instream Flow Program web site http://www.dfg.ca.gov/water/instream_flow_docs.html, also contains comments received from the public comment period and the responses to those comments.

In 2010 the Department began preparing flow recommendations for the McCloud River, Shasta County for transmittal to the Water Board pursuant to the Public Resources Code (PRC) 10001-10002 (Figure 1). The Department anticipates transmitting the flow recommendations for the McCloud River to SWRCB in 2011.

Instream Flow Studies Underway

An instream flow study typically includes the following tasks: 1) project/contract management; 2) habitat mapping; 3) field reconnaissance and site selection; 4) species and lifestage specific habitat suitability criteria (HSC) development, 5) hydraulic data collection; 6) construction and calibration of hydraulic and habitat simulation models; 7) identification of flow recommendations considering all important elements such as hydrology, biology, geomorphology, water quality and connectivity 8) and peer review. Many of these tasks require contracting with outside experts from universities, other agencies, and/or consultants.

Several Department flow studies were underway in 2010 including studies on the Big Sur River, the Santa Maria River, and the Shasta River (Figure 1). Each study includes multi-agency involvement with technical oversight by the Department. A Proposition 84 grant, authorized through the Ocean Protection Council (OPC), funded various levels of support for each of the flow studies by outside contractors. The field work components of each of these flow studies is on schedule and expected to be complete in 2011, with final reports expected in 2012.

Efforts to Seek Funding for Instream Flow Program

The Department has sought funding from various sources including water rights fees, General Fund monies, existing and future bond measures (including leveraging of bond expenditures that might necessitate stream flow studies), federal funding, grants, and fees on project applicants (such as development projects that may necessitate stream flow studies). The Department seeks funding to develop the information and data needed for in-stream flow recommendations, with the goal of transmitting those recommendations to SWRCB for consideration when it exercises its water rights authority.



Figure 1. Map of California identifying rivers where instream flow studies are underway and where flow recommendations have or are being developed pursuant to the Public Resources Code (PRC) 10000 -10005 through the Department of Fish and Game Instream Flow Program during 2009 and 2010.

Funding was secured in 2010 for instream flow work from the Fisheries Restoration Grant Program (FRGP) in the amount of \$185,560 for stream flow monitoring in South-Central Steelhead habitat of the lower Big Sur River. The objectives of the project included: 1) Purchase a satellite telemetry-linked stream flow gage and installation on the lower Big Sur River; 2) Provide operating and maintenance resources for the gage for a period of five years; and 3) Develop a stream flow rating curve and monitor stream flow in south-central steelhead habitat of the lower Big Sur River. The stream flow monitoring is a critical component of the flow study currently underway on the Big Sur River. Another grant proposal submitted by staff through the FRGP for instream flow work on San Gregorio Creek in the amount of \$454,842 was not secured in 2010.

Funding was also secured in the amount of \$1,039,000 as part of the Governor's Budget for 2010-2011 for implementing the Sacramento – San Joaquin Delta (Delta) flow requirements of SB1. Through SB1, the Department will provide oversight on and complete new instream flow studies for priority rivers and streams in the Delta watershed over the next 10 years (FY 2010-11 through FY 2020-2021). The Department received 5.2 positions (3 permanent full time, and 2.2 temporary help) to implement SB1.

In summary, the Department continues to seek funding through grant programs and other efforts for implementation of the Instream Flow Program. Table 1 contains a summary of the funds sought and secured by the Department for implementation of the Instream Flow Program.

Table 1. Funds Sought and Secured for Instream Flow Program 2008-2010.

| | Funds Dedicated and Sought² | Funds Secured³ |
|--|---|----------------------------------|
| Calendar Year 2008 | | |
| Fisheries Restoration Grant Program (FRGP) Fire Relief Big Sur River | \$454,841 | \$0 |
| Ocean Protection Council (OPC) Coastal Flow Studies | \$1,000,000 | \$1,000,000 |
| Calendar Year 2009 | | |
| Fisheries Restoration Grant Program (FRGP) San Gregorio Creek Flow Study | \$454,842 | \$0 |
| Fisheries Restoration Grant Program (FRGP) Big Sur River Flow Monitoring | \$185,560 | \$185,560 |
| Butte Creek Flow Recommendations - dedicated | \$222,732 | \$0 |
| Governor's Budget Proposal for 2010-2011 | \$1,039,000 | \$0 |
| Calendar Year 2010 | | |
| Governor's Budget Proposal for 2010-2011 | | \$1,039,000 |
| Total 2008: | \$1,454,841 | \$1,000,000 |
| Total 2009: | \$1,902,134 | \$185,560 |
| Total 2010: | N/A | \$1,039,000 |

Environmental Filing Fees Review

An application fee (environmental filing fee) for water diversions is currently imposed by PRC Sections 10000-10005 to fund the Department's Instream Flow Program. The environmental filing fees are collected by SWRCB through the water right application process and are transmitted to the Department to help fund the Instream Flow Program. Public Resources Code 10005 sets the filing fee at \$850 per application. Department staff reviewed the filing fees collected in 2009.

In 2010 the Department received \$52,700 pursuant to PRC 10005 from SWRCB. These funds were supplemented with approximately \$89,300 from the Non-

² Funds dedicated and sought includes those funds the Department sought for implementation of the Instream Flow Program, as well as funds dedicated for development of flow recommendations from externally-funded studies and transmittal to the Water Board.

³ Funds secured include those funds the Department received through fund raising efforts that were directed towards implementation of the Department's Instream Flow Program.

dedicated Fish and Game Preservation Fund for one staff environmental scientist to coordinate the Instream Flow Program. It is anticipated that this funding structure will continue for the foreseeable future, although the Department will seek other stable funding in addition to the environmental filing fees.

Identification of Costs for Instream Flow Program

The Department intends to identify and report 1) the cost to the Department to perform or oversee any flow studies and flow recommendations and 2) the gap between the amount of money necessary to continue or begin the desired instream flow studies or to prepare flow recommendations and the amount of money currently available.

The Department estimates that approximately \$1,264,000 per a year would provide for a Instream Flow Program that can make progress at fulfilling PRC mandates. Including all fund raising activities, the Department has been able to secure \$1,181,000⁴ for Instream Flow Program actions in 2010. Existing funds provide a good foundation for the program by funding one full time staff coordinator position. SB1 provides three additional full time staff positions, two temporary positions, and approximately \$581,000 in contracting resources to complete new instream flow studies for priority rivers and streams in the Delta watershed.

⁴ Estimate includes cost of Instream Flow Program Coordinator as well as funds secured from the Governor's Budget FY 10/11 through SB1 to complete new instream flow studies for priority rivers and streams in the Sacramento - San Joaquin River Delta watershed.

II. SUMMARY OF IMPLEMENTATION OF PUBLIC RESOURCES CODE (PRC) 10000-10005.

The Department's efforts to implement PRC 10000-10005 through the Instream Flow Program are summarized in Table 2. The summary includes activities that took place in 2008 – 2010, and those planned for 2011. For more information about these activities please refer to Section I of this report (Program Elements).

Table 2. Summary of the implementation of Public Resources Code (PRC) 10000-10005 activities.

| Public Resources Code (PRC) Sections | Activities | | |
|---|--|---|---|
| | 2008/2009 | 2010 | 2011 (Planned) |
| 10000-10002. Identify significant streams, develop and transmit flow recommendations to SWRCB. | Developed and transmitted flow recommendations for Butte Creek to SWRCB in 2009. | McCloud River identified as significant stream for which stream flow recommendations need to be developed. | Develop and transmit flow recommendations for the McCloud River to SWRCB in 2011. |
| 10003-10004. Priority streams the Department plans on conducting instream flow studies on. | <p>Twenty-two streams identified for future instream flow studies.</p> <p>Flow studies initiated for the following streams in 2009:</p> <ul style="list-style-type: none"> - Big Sur River - Shasta River - Santa Maria River | <p>Continued flow studies on Big Sur, Shasta, and Santa Maria Rivers.</p> <p>Began flow monitoring work with USGS on Big Sur River.</p> | Complete field work on Big Sur, Shasta, and Santa Maria Rivers. Continue USGS flow monitoring on Big Sur River. Initiate two new flow studies in Delta watershed. |
| 10005. Review Environmental Filing fees. Seek funding for Department Instream Flow Program. | <p>Environmental Filing Fees reviewed.</p> <p>Funds for 2008 and 2009 Department Instream Flow Program were sought from the Department Fisheries Restoration Grant Program (FRGP: \$1,095,243) and the Ocean Protection Council (OPC: \$1,000,000).</p> | <p>Environmental Filing Fees reviewed.</p> <p>Funds for 2010 Department Instream Flow Program were sought through a Budget Change Proposal (BCP) as part of SB1: Delta Flow Criteria (\$1,039,000).</p> | <p>Review Environmental Filing Fees.</p> <p>Funds for 2011 Department Instream Flow Program may be sought from various grant programs.</p> |

III. GENERAL WORKPLAN FOR CALENDAR YEAR 2011

Program Goals and Objectives – Calendar Year 2011

The overall goal of the Instream Flow Program is to develop scientific information to be used in developing flow recommendations that can be provided to SWRCB, as required by Public Resource Code 10000-10005. The primary objective of the Instream Flow Program is to develop scientific information on the relationships between flow and physical stream habitat for indicators of ecosystem health. Flow habitat relationships for critical aquatic species' lifestyles would be developed on selected priority streams. Anticipated projects may include development of the following information: relationships of flow to aquatic habitat, aquatic habitat suitability, stream temperature, channel geomorphology, riparian habitat and restoration activities; the temporal and spatial hydrologic characteristics of flow regimes; fish population abundance, distribution and dynamics; and aquatic invertebrate production.

The Department's Instream Flow efforts may also include: performance review of studies and development of flows by the Department or its contractors; consultation regarding study plans with individuals, agencies or corporations performing studies; review of instream flow studies not performed by the Department itself; and development of associated recommendations from studies not performed by the Department.

Priority Tasks, Schedules, and Proposed Budget for 2011

Priority tasks, schedules, and the associated proposed budget for the 2011 general workplan are outlined below. It is important to note that all tasks are deemed a priority for implementing the Instream Flow Program in 2011, with the exception of Task 2. Task 2 was completed in calendar year 2008, and will serve as the basis for the Department's instream flow efforts and investigations in the following years.

A. PRIORITY PROGRAM TASKS FOR 2011

TASK 1. Program Management.

Overall project management and administration includes overseeing and coordinating instream flow activities, technical focus groups, project coordination meetings, seeking funding through preparation of grant funding proposals, and managing project finances (budgets, contracts, etc.).

TASK 2. Identification of Priority Streams for Instream Flow Assessments.

Identification of instream flow needs includes the development of the Department's Priority Stream List, which will be used to guide the Department's future instream flow investigations. The current list was developed and ranked

with input from the Department's Regions, SWRCB, NMFS, and the USFWS. The Director has the discretion to revise the list and may add or delete streams as circumstances require. The current list was developed in August 2008.

TASK 3. Coordination of the Department's Instream Flow Efforts.

Coordination of Department's instream flow efforts includes coordination with the Department's Regions, SWRCB, USFWS, NMFS, other scientists, and other interested parties.

TASK 4. Conducting Instream Flow Assessment Investigations.

The Department is intending to initiate two flow studies on two tributaries of the Delta watershed in 2011 with contracted assistance from the USFWS. Selection of the waterways will be coordinated with interested agencies and staff, and will consider the Department's Priority Streams List (2008) as well as priority streams and rivers from SWRCB.

The Department also expects to continue and complete the field work components of the stream flow investigations on the Shasta River, Big Sur River, and the Santa Maria River in 2011. The Shasta River flow studies will include working with Humboldt State University to conduct two in-stream flow analyses: one for the mainstem of the Shasta River (Shasta River Canyon reach) and another for the Big Springs complex of the Shasta River, both of which provide critical coho salmon rearing habitat. The Shasta River flow work involves working with Humboldt State University to determine instream flow needs for salmonids in both reaches of the Shasta River. The Big Sur River flow study is primarily an internally Department supported effort focused on adult steelhead migration and juvenile rearing, with some support from the Ocean Protection Council for contracting with Pacific States Marine Fisheries Commission and Thomas R. Payne and Associates to develop steelhead habitat suitability criteria and conduct an assessment of the Big Sur River lagoon. The field work for the habitat suitability criteria and hydraulic modeling components of the study are expected to be complete by summer 2011. The Santa Maria River flow study includes working with a private contractor selected by the OPC to determine flows needed for passage of steelhead into upper reaches of the Sisquoc River, as well as to determine use and habitat suitability of the lagoon and Sisquoc River for steelhead habitat.

TASK 5. Identification and Evaluation of Instream Flow Studies.

Identification and evaluation of instream flow studies includes the identification and evaluation of existing, recently completed or on-going studies that could form the basis for flow recommendations. This task also includes data assessment, interpretation, and reporting. Data collected as part of the flow study investigations on the Shasta River, Big Sur River, and Santa Maria River as outlined in Task 4 will be evaluated and assessed throughout implementation of the studies and discussed to ensure the products are useful for developing flow recommendations by the Department.

TASK 6. Development and Transmittal of Flow Recommendations.

Development and transmittal of flow recommendations includes the development of flow recommendations from either existing and/or new data, and the transmittal of those flow recommendations to SWRCB. Flow recommendations are anticipated to be developed for the McCloud River using existing data, and transmitted to SWRCB in 2011.

TASK 7. Partnership with SWRCB.

This task includes maintenance of a partnership with the SWRCB to harmonize priority setting, study availability, and data evaluation. The Department plans to coordinate work with SWRCB on stream flow studies being conducted to address development of flow criteria for the Sacramento-San Joaquin River Delta in 2011.

TASK 8. Seek funding for Instream Flow Program.

This task includes seeking funding for the Department's Instream Flow Program. The Department intends to seek funding from various grant sources to implement the Instream Flow Program. The funding, if secured, may be used to either supplement planned activities in priority Delta tributaries, or used for other flow study activities on other priority rivers and streams outside the Delta Watershed.

B. SCHEDULES AND DELIVERABLES

| # | TASK | Dates | | Deliverables ⁵ |
|---|---|-----------|-----------|--|
| | | Start | Complete | |
| 1 | Program Management | 1/01/11 | 12/31/11 | Annual Report |
| 2 | Identification of Priority Streams for Instream Flow Assessments ⁶ | No Action | No Action | No Action |
| 3 | Coordination of the Department's Instream Flow Efforts | 1/01/11 | 12/31/11 | Meeting/Workshop Agendas and/or email records. |
| 4 | Conducting Instream Flow Assessment Investigations | 1/01/11 | 12/31/11 | Project-Specific Study Plans, Field Data, Site Maps, Contractor Progress Reports |
| 5 | Identification and Evaluation of Instream Flow Studies | 1/01/11 | 12/31/11 | Technical Meeting Agendas, Contractor Progress Reports, Supporting Data |
| 6 | Development and Transmittal of Flow Recommendations | 1/01/11 | 12/31/11 | Flow Recommendations for the McCloud River |
| 7 | Partnership with SWRCB | 1/01/11 | 12/31/11 | Delta Flow Criteria for Sacramento-San Joaquin River Delta |
| 8 | Seek Funding for Instream Flow Program | 1/01/11 | 12/31/11 | Grant Proposals |

⁵ All outcomes and deliverables from program tasks will be summarized and reported in subsequent annual reports.

⁶ Task 2 was completed in calendar year 2008, and will serve as the basis for the Department's instream flow efforts and investigations in the following years. If priorities change a new list will be developed.

C. PROPOSED 2011 BUDGET AND FUNDING SOURCES

| # | TASK | PROPOSED BUDGET (EXISTING STAFF ⁷) | PROPOSED NEW STAFF BUDGET ⁸ (SB1 DELTA FLOW CRITERIA) | PROPOSED STAFF BUDGET TOTAL 2011 |
|--------------------------------------|---|--|--|----------------------------------|
| 1 | Program Management | \$21,300 | \$45,800 | \$67,100 |
| 2 | Identification of Instream Flow Needs | \$0 | \$0 | \$0 |
| 3 | Coordination of the Department's Instream Flow Efforts | \$14,200 | \$68,700 | \$82,900 |
| 4 | Coordinating and Conducting Instream Flow Assessment Investigations | \$56,800 | \$229,000 | \$285,800 |
| 5 | Identification and Evaluation of Instream Flow Studies | \$7,100 | \$22,900 | \$30,000 |
| 6 | Development and Transmittal of Flow Recommendations | \$21,300 | \$68,700 | \$90,000 |
| 7 | Partnership with SWRCB | \$7,100 | \$22,900 | \$30,000 |
| 8 | Seek Funding for Instream Flow Program | \$7,100 | \$7,100 | \$7,100 |
| SubTotal | | \$142,000 | \$458,000 | \$600,000 |
| Contract Services⁹ | | | | \$581,000 |
| Total | | | | \$1,181,000 |

⁷ It is anticipated that existing funds (\$89,300) and Environmental Filing Fees (\$52,700) will be used to fund one existing Staff Environmental Scientist at approximately \$142,000 (including overhead and benefits). Environmental Filing Fees are an \$850.00 fee charged for certain types of water rights applications by SWRCB, which is transmitted to the Department.

⁸ One Senior Engineer, two Environmental Scientists, and 2.2 temporary help personnel.

⁹ Contract services for instream flow studies provided through SB1 funds secured in 2010.