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Watercraft Inspection Station Analysis 2018

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WATERCRAFT INSPECTION STATION
EXECUTIVE SUMMARY

The state of Idaho maintains a total of 18 stations that inspect boats to protect the state's waterways from aquatic invasive species (including zebra and quagga mussels specifically). This study aimed to estimate the costs and benefits of extending inspection station hours of operation from *daylight hours only* to *24-hours.* This was achieved by conducting a thorough analysis of cost and benefit data from the 24-hour pilot operation of the Cotterell station and administering an attitudinal survey of station managers.

While results from the quantitative cost/benefit analysis are not straightforward, they are highly informative. Overall, examination of inspections during the 24-hour operation period of July 21, 2017 – Oct 1, 2017 shows that greater output measures are produced during daytime hours than during nighttime hours. Still, it is noted that there are occasions when the volume of night inspections becomes substantial. When the daylight-hour operation period (June 1 , 2017– July 20, 2017) and the 24-hour operation period are compared, the former is found to be higher than the latter in standardized inspection measures, while the two periods are virtually indistinguishable in per-hour costs.

Among surveyed watercraft inspection station managers, most reported that their employees would be uncomfortable operating their station during nighttime hours, especially those whose stations had no experience with non-daylight hour operations. Several managers highlighted limiting factors such as the remote location of their station, limited cell phone service coverage, a lack of electricity and the need for law enforcement personnel to be present. That said, most managers expressed positive feedback over the support they receive from the Idaho State Department of Agriculture for their station.

INTRODUCTION

The state of Idaho maintains a total of 18 stations that inspect boats to protect the state from aquatic invasive species. Among the 18 stations, five are operated by Idaho State Department of Agriculture (ISDA) staff and the rest are operated by local cooperators through contract. Currently, inspection stations are open only during daylight hours. In 2017, a pilot program testing the implementation of a 24-hour operation cycle was conducted at the inspection station at the Cotterell site.

This study aims to estimate costs and benefits regarding the extension of operation from *daylight hours only* to *24 hours*. The research team believes that a cost benefit analysis for a new program will be helpful to policymakers in determining the program's effectiveness in achieving its objectives. Analysis of a program is more reliable when data is available from an actual pilot implementation, as without data, the analysis must rely on making hypothetical assumptions. The pilot implementation at the Cotterell station offered a rare opportunity to analyze reliable data about the effects such a program produces.

After presenting a brief background of aquatic inspection, this study reports findings from two major separate analyses: a quantitative analysis of the costs and benefits of the Cotterell pilot program and an analysis of survey responses from watercraft inspection station managers.

BACKGROUND ON AQUATIC INSPECTIONS

Since their introduction to the Great Lakes in the 1980's, invasive Eastern European zebra and quagga mussels have spread rapidly throughout U.S. waterways. The western U.S. was sheltered from the spread for many years, due to its isolation from infested eastern lakes and rivers. But in 2007, invasive mussels were found in Lake Mead, along the Nevada and Arizona borders. The carrier was most likely a recreational watercraft.[1] Since their discovery in Lake Mead, both zebra and quagga mussels have been found in waterways across the west.[1] In 2009, Wyoming, Washington, Oregon and Idaho were the only remaining western states where none had been found.[2]

Stopping the spread of zebra and quagga mussels has become a major ecological priority for western states, because they can cause significant environmental damage by competing with native species and disrupting biological systems. In addition, they can cause major infrastructural damage by clogging, or "biofouling", water supply pipes to power plants, public water supply plants and other sites. They are also known to damage motorboats by clogging engine cooling systems.[3] For these reasons, the Western Regional Panel on Aquatic Nuisance Species predicts that if these mussels aren't contained, they could cause billions of dollars in long-term damage.[2] The Idaho Invasive Species Council estimates that a mussel invasion could cost the state more than ninety-four million dollars, by conservative measures.[4] In addition, it is predicted that if these mussels are introduced into Idaho waters, they will be impossible to eradicate.[3]

As an early response to this threat, Congress passed the National Invasive Species Act of 1996, which mandated research grants to determine "environmentally sound methods for controlling the dispersal of aquatic nuisance species" and recommended

the "development and use of regional coordination panels" to create programs for "education, monitoring, prevention, and control" in order to prevent the spread of aquatic invasive species such as the zebra mussel. This Act prompted the Western Regional Panel on Aquatic Nuisance Species to create the 100th Meridian Initiative, a Federally-guided strategic planning alliance, incorporating multiple layers of government, as well as impacted industries, designed to create measures to prevent aquatic nuisance species from spreading west of the 100th Meridian, which runs vertically through the middle of the United States.[1]

However, after Lake Mead became infested in 2007, many regional authorities saw a need to increase prevention measures, particularly regarding recreational watercraft that were being transported via trailer from contaminated waterways into clean waterways.[5] To stop the spread of invasive mussels, along with other invasive species, western states worked with the 100th Meridian Initiative and the Aquatic Nuisance Species Task Force to develop more rigorous boat inspection and decontamination programs, supported by public education outreach.

In addition to these efforts, many western states, including Washington, Oregon, Idaho, Montana, Utah, Wyoming, Arizona, Colorado and Nevada, as well as federal and local governments, have passed laws allowing greater authority in searching watercraft and related equipment, as well as impounding contaminated equipment for cleaning and issuing fines for improper adherence to regulations.[4]

To enforce these initiatives, these states have established watercraft checkpoint stations (or added that functionality to existing stations), intended to stop, check and decontaminate recreational boats being hauled on trailers from contaminated areas to uncontaminated areas.[4] Depending on the risk level at the area and the funding available, protocol at stations may include screening interviews, basic inspections, comprehensive inspections, decontamination, quarantine and/or a vessel certification system.[4]

Idaho passed the Idaho Invasive Species Law in 2008, establishing the duties of the Idaho State Department of Agriculture (ISDA) for preventing invasive species and giving state officials the authority to enforce this plan through inspections, permitting, and decontamination.[3] It also created the Idaho Invasive Species Fund, which would be funded in 2009 by the passing of the Invasive Species Prevention Sticker Rules. The Rules require boats launching in the state to possess an Invasive Species Sticker, purchased annually. The rates vary for vessels registered in or out of Idaho and for vessels with or without motors.[3]

In addition to serving as an emergency response fund, revenue from the Idaho Invasive Species Fund is used to fund the ISDA's comprehensive prevention program, which includes public education, waterbody monitoring and inspection and decontamination.[3] Idaho currently maintains 22 roadway boat inspection stations at strategically placed locations throughout the state. These inspection stations remain open around boating season, with specific times varying between stations. Since the beginning of the boat inspection initiative in 2009, more than 500,000 boat inspections have been conducted in Idaho, and 218 contaminated boats have been found.[6] The majority of contaminated boats have been found at stations along the southern and eastern borders of the state.[3]

Due to its proactive approach to prevention, the Idaho invasive species program has served as a pioneer program, and has been a model for other western states. Idaho is also unique, in that it has assigned this responsibility to the state department of agriculture, which is an uncommon choice for other states, despite the fact that these state departments often possess prior expertise in addressing invasive species.[3]

COST AND BENEFIT ANALYSIS OF PILOT PROGRAM AT COTTERELL

METHODS

The pilot implementation of 24-hour operation at the Cotterell station from July 21, 2017 through Oct 1, 2017 generated highly reliable, actual data for costs and outputs (i.e., benefit) for 24-hour operation. Located off I-84 near the I-84 and I-86 interchange, this station was initially operated by the staff of ISDA, from Mar 10, 2017 through May 31, 2017. The West Cassia Soil and Water Conservation District (W-C SWCD) began operating the station during daylight hours from June 1, 2017 through July 20, 2017, seven days per week.[7] It extended operation to 24 hours, including nighttime, from July 21, 2017 through Oct 1, 2017.

The focus of this analysis is on the Cotterell station from June 1, 2017 - Oct 1, 2017, the time period it was operated by W-C SWCD. Operation conducted by the ISDA staff prior to June 1, 2017 is excluded.[8] The information for costs, inputs (hours operated), and outputs (number of boat inspections, hot washes performed, boats with weeds found, and boats fouled) were obtained from ISDA staff. The amount of actual expenditures paid to the W-C SWCD is used as the total cost for the operation, which is justified for the following reasons: first, the expenditures include labor cost, and labor cost accounts for the largest share of the cost.[9] In addition, as the W-C SWCD is not part of ISDA full-time employees, there are no additional costs associated with pension or other benefits. Lastly, ISDA staff allows cooperators to bill non-labor fixed costs such as supplies that include "[s]hed rental, portable lavatories, and phone/internet costs."[10]

Findings from this phase of the analysis proceed first with preliminary analysis, then comparison between day inspections and night inspections, and finally an analysis of aggregated data of output and cost.

FINDINGS

PRELIMINARY ANALYSIS

Figure 1 shows how many inspections were conducted per day during the entire study period from June 1 through Oct 1, 2017 by the W-C SWCD. Thus, on June 1, the operator inspected 20 boats. By July 20, the last date of daylight hour operation, the highest was 42 inspections (June 30), while the lowest was four (July 4, July 18). Thirty three boats were inspected on July 20. When the Cotterel station began extended hours of operation (to 24 hours) on July 21, it reported 63 inspections, which happened to be the peak number reported during the study period. The lowest number reported was four on Aug 21 and Oct 1. Trends show that the inspection volume went up toward the middle of the period and then gradually declined, indicative of seasonal changes, suggesting that the summer has a greater number of boats in traffic.

Figure 2 and Figure 3 show the total number of inspections and the total number of

hot washes, respectively, broken into hours between July 21 – Oct 1. As these figures demonstrate, nighttime inspections were limited: 0:00 a.m. – 0:59 a.m. account for 2 percent (23 inspections), 1:00 a.m. – 1:59 a.m. <1 percent (6 inspections), and 2:00 a.m. – 2:59 a.m. <1 percent (4 inspections). Moving into daytime hours, inspections increased: 5 percent (64 inspections) for 9:00 a.m. – 9:59 a.m., 8 percent (110 inspections) for 12:00 p.m.-12:59 p.m., and a high of 9 percent of all inspections (121 inspections) for 17:00 p.m. – 17:59 p.m.

The number of hot washes by hour has a similar trend: two hot washes (2%) reported between 0:00 a.m. – 0:59 a.m., one hot wash (1%) for 3:00 a.m. – 3:59 a.m., and one hot wash (1%) for 4:00 a.m. – 4:59 a.m. During daytime inspections, the number of hot washes rose: five hot washes (4%) for 8:00 a.m. – 8:59 a.m., 11 hot washes (9%) for 11:00 a.m. – 11:59 a.m., and 16 hot washes (13%) for 12:00 p.m. – 12:59 p.m., which made up the largest share for 24 hours.

While the preceeding charts are informative, they do not allow for comparing inspections conducted during daylight hours and those conducted during the night. Such comparison requires each inspection to be classified as one of two categories: (1) inspections conducted in daylight hours (day inspections) and (2) inspections conducted in nighttime (night inspections).

It should be noted that the lengths of day and night change every day. In summer, daylight goes beyond 12 hours and it shortens as the season moves towards fall. An inspection recorded at 7:00 a.m. on July 28, 2017 should be considered a day inspection, as the sun rose at 6:30 a.m. that day[11]; yet, an inspection at the same time (7:00 a.m.) on Sep 20, 2017 should be regarded as a night inspection, as sunrise was 7:30 a.m. that day.[12]

FIGURE 1: INSPECTION TOTALS (COTTERELL)

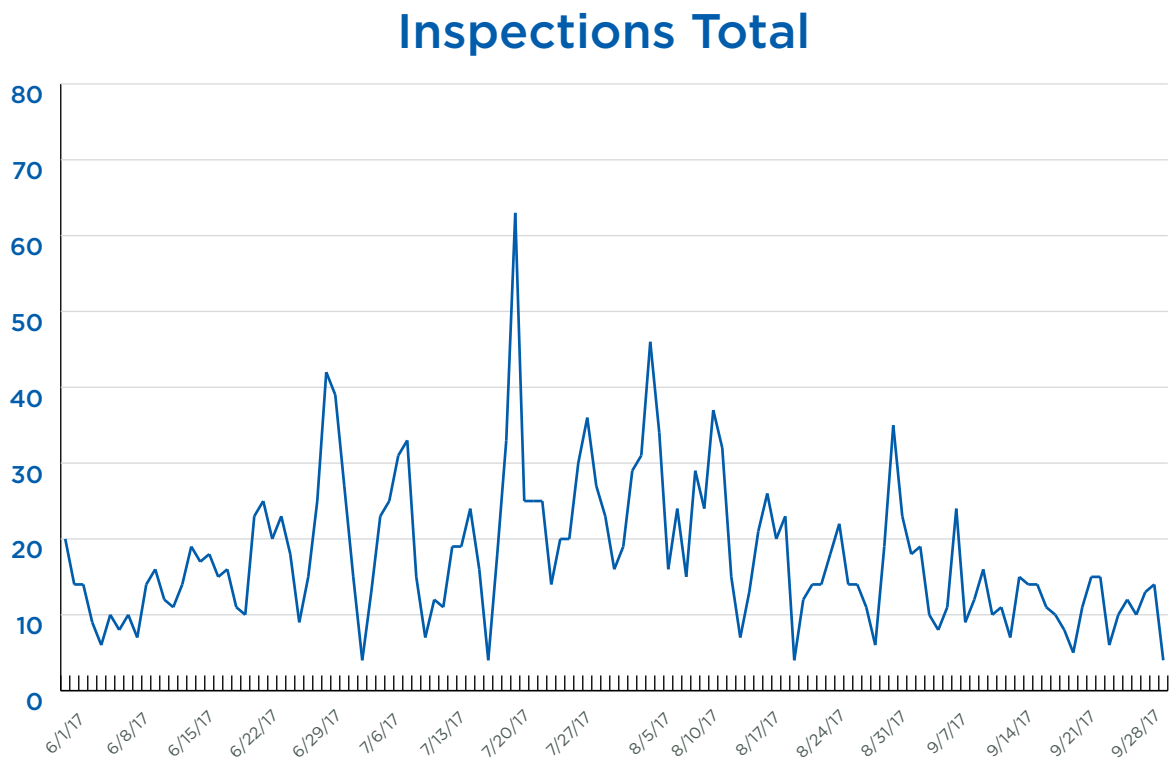


FIGURE 2: INSPECTIONS BY HOUR (COTTERELL)

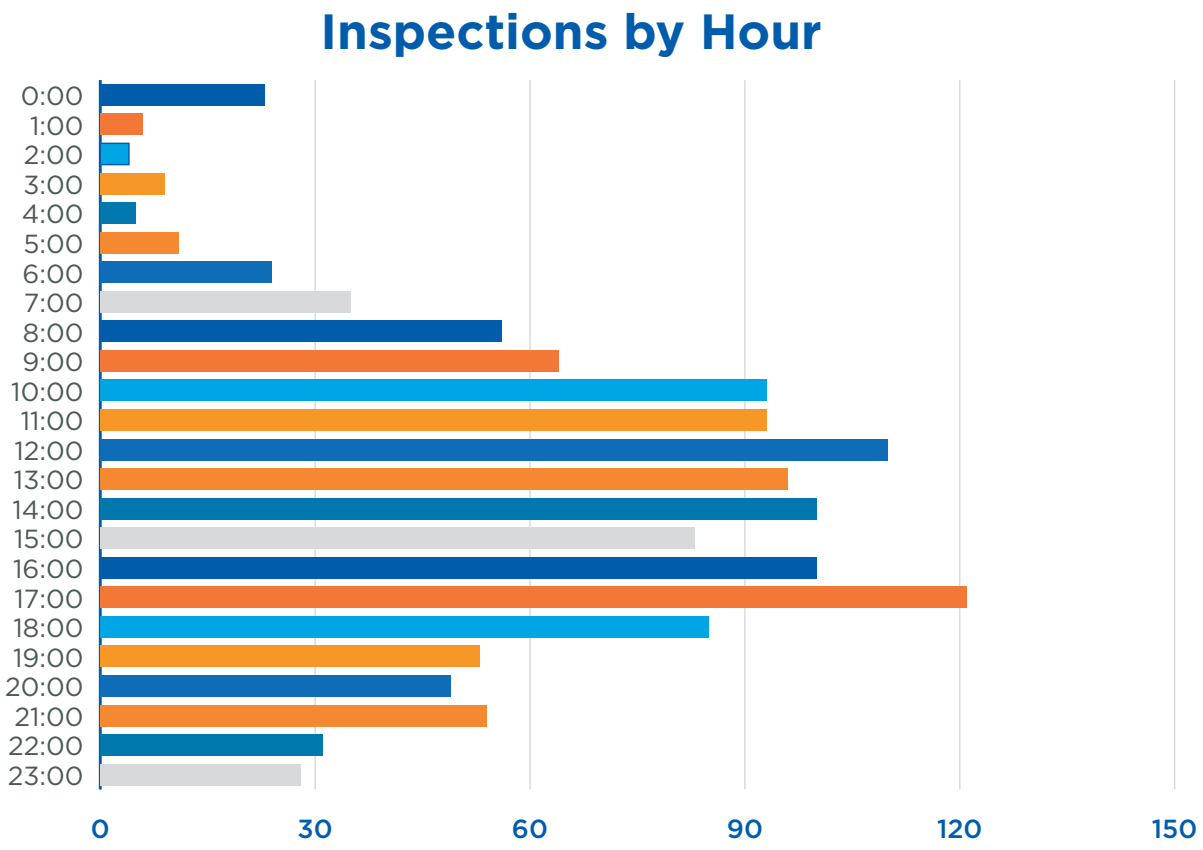
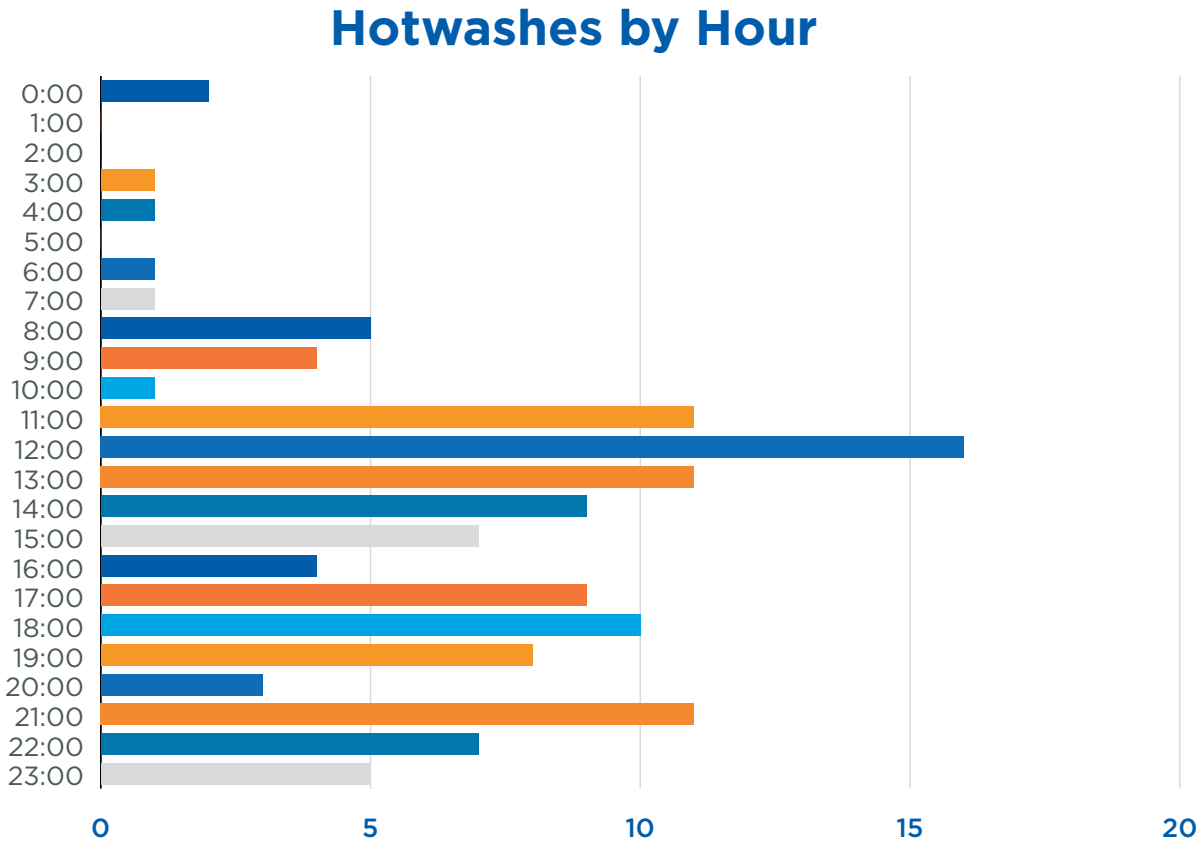


FIGURE 3: HOTWASHES BY HOUR (COTTERELL)



From July 21, 2017 through Oct 1, 2017, a total of 1,333 inspections were reported. For accurate analysis, this study went through each of the 1,333 inspections and then defined each inspection on a date as either day or night inspection based on the timing of the inspection, sunrise and sunset on the date.[13] If an inspection happened in the daytime (the date's sunrise – the date's sunset), it was defined as a day inspection. If that happened in nighttime (the start of the date - the date's sunrise, the date's sunset - the date's midnight), it was defined as a night inspection. When an inspection occurred exactly at the sunrise time, the inspection was coded as a day inspection; when it occurred exactly at the sunset time, it was coded as a night inspection.

INSPECTIONS: DAY VS. NIGHT

Figure 4 shows how many inspections were performed from July 21, 2017 through Oct 1, 2017 in total, during daytime hours and during nighttime hours. During this period, the total number of inspections was at its peak on July 21 (63 inspections), followed by Aug 5 (46) and Aug 12 (37). During this time, there were occasions where as few as four (Oct 1, Aug 21) or five inspections (Sep 21) occurred. The highest number of day inspections was 58 (July 21), followed by 35 (Aug 5). The lowest daytime inspection count was four (Aug 21, Oct 1). Alternatively, the highest number of nighttime inspections was 11 (Aug 5), followed by seven (Aug 11, Aug 20, Sep 8). There were no night inspections on July 27, Aug 21, Aug 30, Sep 21, or Oct 1. Trends again suggest seasonal changes; in other words, inspections per date tended to occur more often in summer; they began to occur less often as fall approached.

Figure 5 shows percentage shares of inspections per date by day or night. The share of day inspections tended to be higher than that of night inspections, which makes sense because the volume of traffic is typically higher during the day. Several dates had no night inspections recorded (July 26, July 27, Aug 21, Aug 30, Sep 20, Sep 21, Oct 1). Yet, on several occasions, the share of night inspections was substantial, accounting for more than 30 percent – for example, 40.00 percent (Sep 28), 38.46 percent (Sep 29), 37.50 percent (Sep 11).

It should be noted that the 24-hour operation period spanned summer (July 21 – Aug 31) and early fall (Sep 1 – Oct 1), during which daylight hours were longer than night hours. As such, night is underrepresented in this period. One way to alleviate the underrepresentation of night is by calculating per-hour measures such as day inspections divided by daylight hours and night inspections divided by night hours, which are shown in the Figure 6 and Figure 7.

With day inspections and night inspections now more comparable, we are better able to evaluate them. Overall, Figure 6 confirms the prevalence of day inspections over night inspections, even when the measures are standardized by their respective unit hour. Yet, it also suggests that the number of night inspections looks more substantial than that in Figure 4.

More specifically, the number of *total inspections per hour* was at its high at 2.63 (July 21), followed by 1.92 (Aug 5) and 1.54 (Aug 12). The lowest was 0.17 (Aug 21, Oct 1), followed by 0.21 (Sep 21). *Day inspections per day hour* was at its high at 3.89 (July 21), followed by 2.43 (Aug 5). The lowest was 0.29 (Aug 21), followed by 0.34 (Oct 1). The highest number

FIGURE 4: INSPECTIONS BY DAY, NIGHT, TOTAL (COTTERELL)

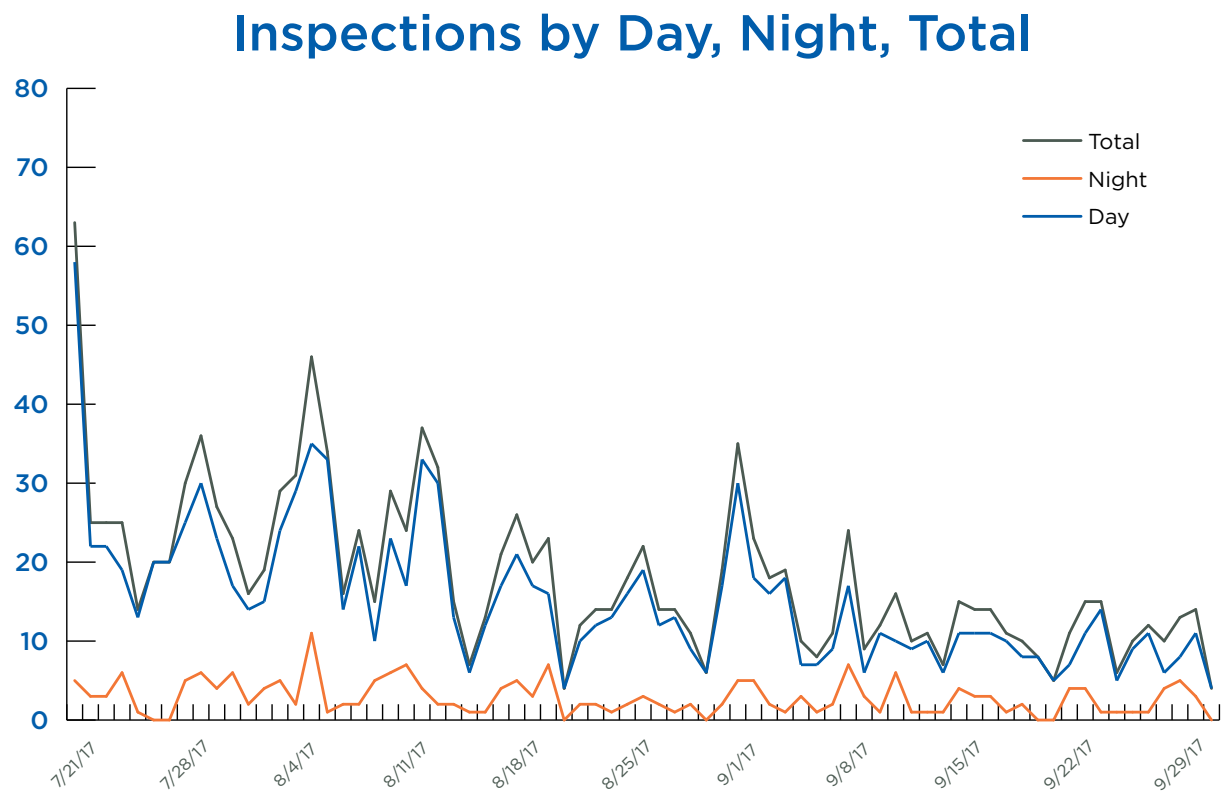


FIGURE 5: RELATIVE SHARE OF INSPECTIONS: DAY VS. NIGHT (COTTERELL)

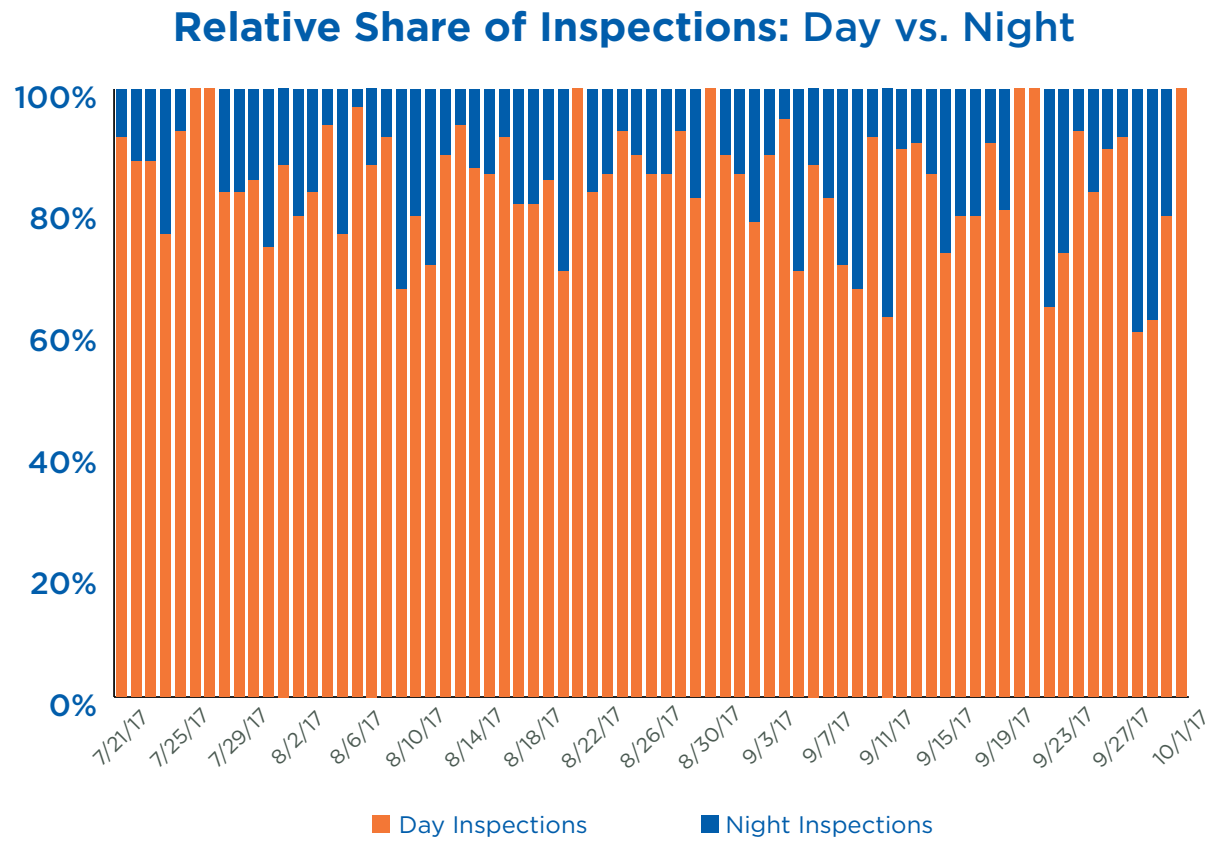


FIGURE 6: INSPECTIONS PER HOUR BY DAY, NIGHT, TOTAL (COTTERELL)

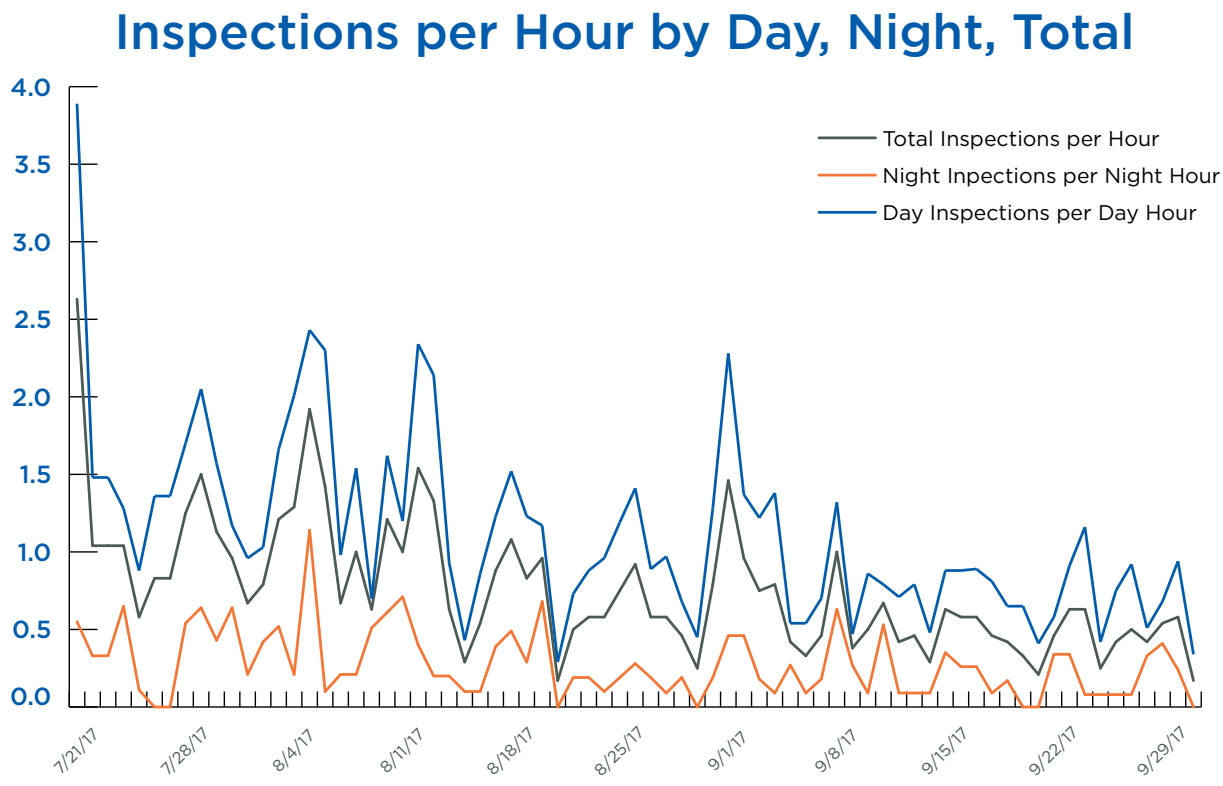


FIGURE 7: RELATIVE SHARE OF PER-HOUR INSPECTIONS: DAY VS. NIGHT (COTTERELL)

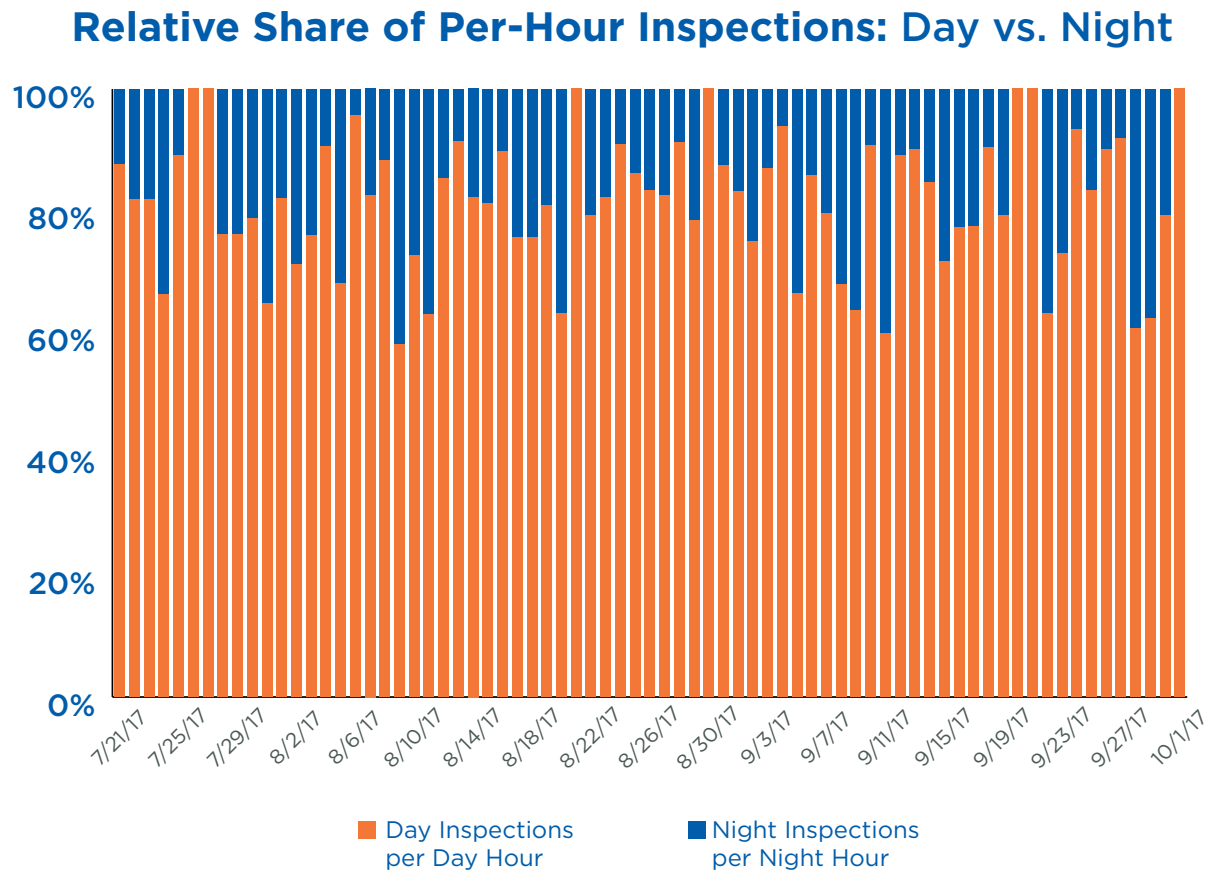


TABLE 1: OUTPUT BY DAY AND NIGHT

	Inspections	Day Inspections per Day Hour vs. Night Inspections per Night Hour	Hot washes Performed	Weeds Found	Boats Fouled
Day	1,125	1.15	101	4	2
Night	208	0.27	26	0	1
Total	1,333	N/A	127	4	3

Source: Compiled from ISDA Data

of *night inspections per night hour* was 1.14 (Aug 5), and then 0.71 (Aug 11). Several zeros were found for this measure, including July 27 and Aug 21, among others. Trends again implied seasonal changes from summer to fall, when boat traffic declined.

The substantial increase in the share of night inspections is portrayed in Figure 7. We can see there was an increasing number of dates when per-night-hour night inspections constituted more than 30 percent of all inspections, including Aug 9, Sep 11 or Sep 28. Especially on Aug 9, this measure constituted as high as 42.14 percent (0.51 inspections/hour).

ANALYSIS OF AGGREGATED OUTPUT AND COST DATA

The preceding figures for inspections and per-hour inspections on a daily basis are summarized in the first two columns of Table 1.

Out of a total 1,333 inspections conducted during July 21 – Oct 1, in all 1,125 (84%) were day inspections, while 208 were night inspections (16%). Standardized by their respective unit hour, there were 1.15 day inspections conducted per day hour (or 81 percent of total inspections), while there were 0.27 night inspections conducted per night hour (19 percent of total inspections).

OPERATOR ACTIONS

After inspection, the operator can determine whether boats should be hot washed if one of the following criteria applies:

- Vessel has been in infested water in the previous 30 days
- Weeds are present that cannot be removed by hand
- Vessel is from an unknown origin
- Dead mussels are found
- High risk inspection form[14]

Thus, a hot wash can be thought of as a more serious case of inspection. Overall, a hot wash was performed 127 times during the pilot study, out of which 101 were performed during the day (80%) while 26 were performed at night (20%). Weeds were found during four inspections, all during the day. A total of three boats were fouled during this time

FIGURE 8: TOTAL INSPECTIONS (COTTERELL)

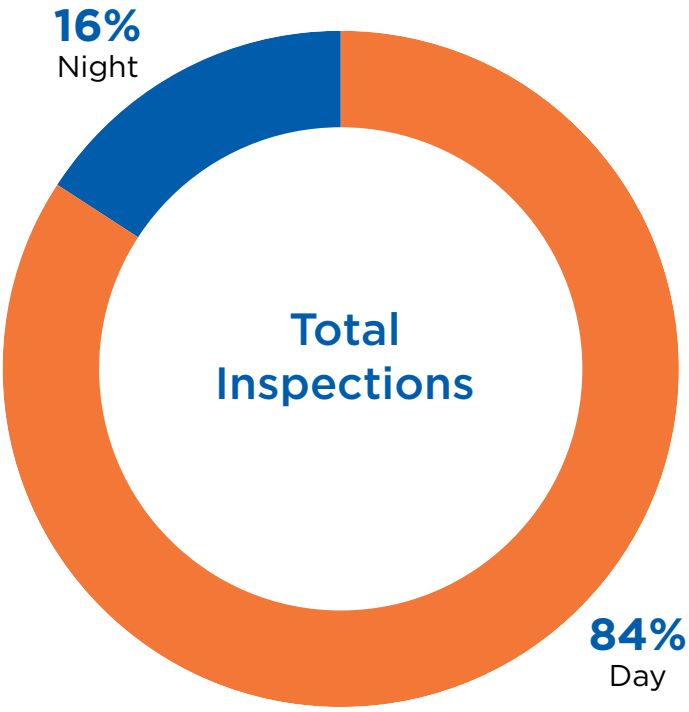


FIGURE 9: TOTAL HOTWASHES (COTTERELL)

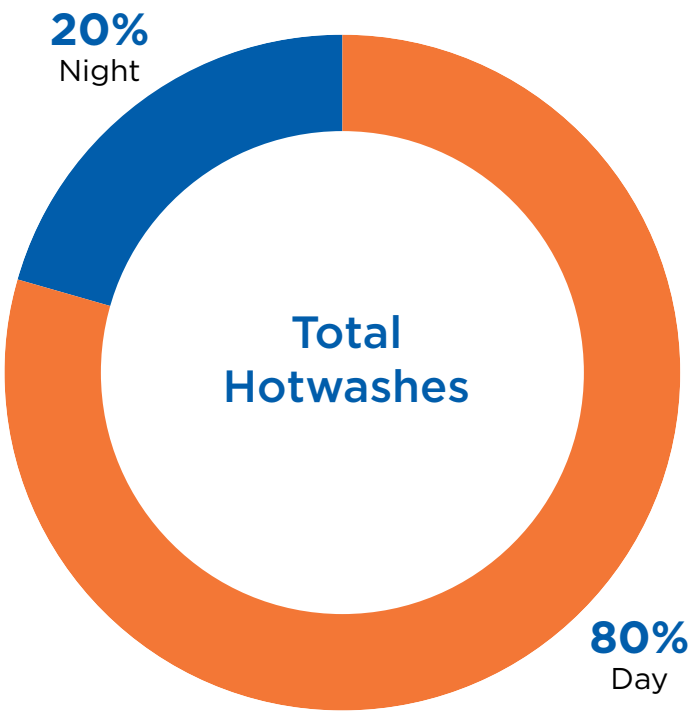


FIGURE 10: TOTAL WEEDS (COTTERELL)

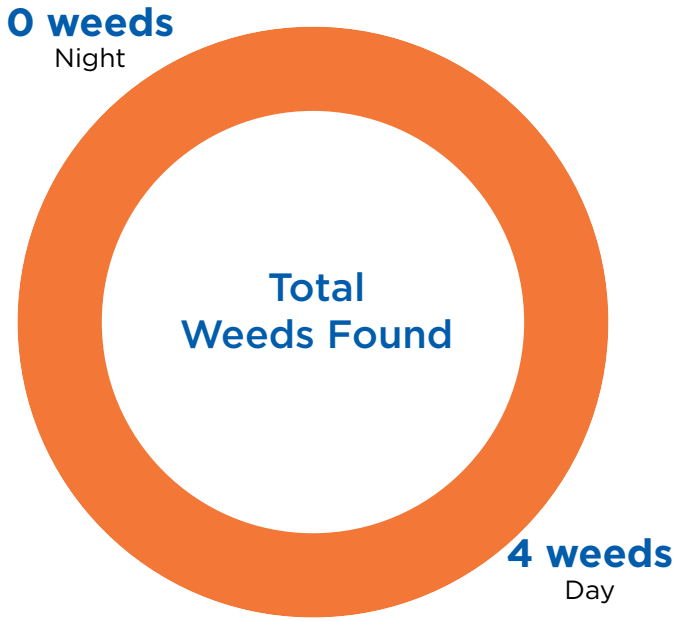


FIGURE 11: TOTAL FOULED BOATS (COTTERELL)

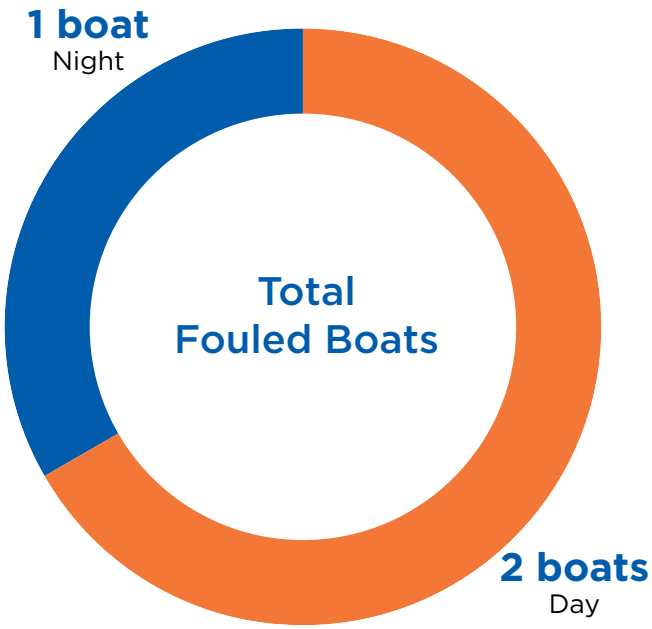
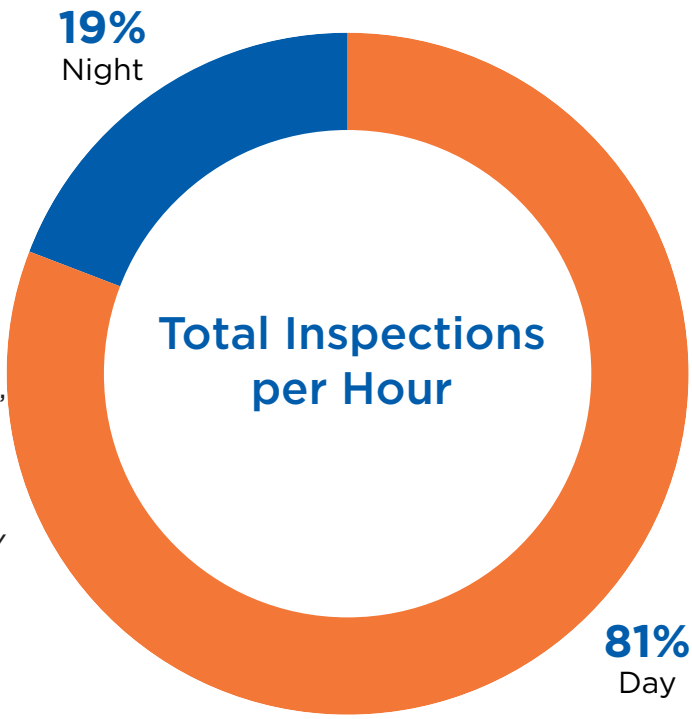


FIGURE 12: TOTAL INSPECTIONS PER HOUR (COTTERELL)



period, two during the day, one at night (recorded at 7:30 a.m. on Sep 24, when sun rose at 7:34 a.m.). Figure 8, Figure 9, Figure 10, Figure 11 and Figure 12 summarize this information.

Thus far, this analysis has focused primarily on the period of 24-hour operation (July 21, 2017 – Oct 1, 2017) by comparing day and night inspections. Table 2 compares inspections (output), operating hours (input), and expenditures (cost) during the 24-hour operation period with the outputs, inputs, and costs during the period of June 1, 2017 – July 20, 2017 when the station was open *only* during daylight hours.

During the period of daylight-only operation, a total of 859 boats were inspected at the Cotterell station. During the period of 24-hour operation, inspections totaled 1,333. The station was open for 765.32 operating hours during the daylight operation period (= hours between sunrise and sunset per day*50 days) and for 1,752 operating hours for the 24-hour operation period (= 24 hours per day*73 days). Per ISDA staff, the department paid the operator a total $29,695.04 for operation during June 1 – July 20, while they paid the operator a total $68,507.53 for 24-hour operation during July 21 – Oct 1.

Direct comparison between the two time periods becomes possible by standardizing numbers by operating hours or expenditures (i.e., cost). When calculated, cost per hour was $38.80 for the daylight operation period and $39.10 for the 24-hour operation period. There seemed to be no significant difference. On the other hand, the number of inspections per hour was greater during the daylight operation period (1.12) than the 24-hour operation period (0.76). In addition, the number of inspections per $100 in cost was

TABLE 2: DAYLIGHT OPERATION AND 24-HOUR OPERATION

	Daylight Operation (June 1 - July 20)	24-Hour Operation (July 21 - Oct 1)
Inspections Total (A)	859	1,333
Operating Hours Total (B)	765.32	1,752
Expenditures ($) (C)	29,695.04	68,507.53
Expenditures ($100) (D=C/100)	296.95	685.07
Cost per Hour (=Hourly rate) (C/B)	38.80	39.10
Cost per Inspection (C/A)	34.56	51.39
Inspections per Hour (A/B)	1.12	0.76
Inspections per 100 Dollar of Expenditures (A/D)	2.89	1.94

Source: Compiled from ISDA Data

2.89 for the daylight operation period and 1.94 for the 24-hour operation period.

Cost per inspection was created by the size of expenditures divided by the number of inspections to determine how much cost is incurred to inspect one boat. The measure was $34.56 during the daylight operation period, which became 51.39 dollars during the 24-hour operation period. The inspection became expensive by running the station for 24 hours, although the amount for the latter was less than twice that for the former.

IMPLICATIONS

The analysis from the Cotterell station yielded mixed results. When day inspections and night inspections were compared, the volume of day inspections was typically much larger than that of night inspections; yet, on some occasions, the share of night inspections became substantial. When the daylight operation period and the 24-hour operation period were compared, per-hour costs for each period were similar, but the standardized inspection measures (Inspections per hour, Inspections per $100 of expenditures) were higher in the daylight hour operation period than the 24-hour operation period. The mixed results from this analysis can be used as a sound basis for deliberation among policymakers to determine whether extending 24-hour operation to all the other inspection stations is warranted.

Note that some results are directly applicable to the operation of other inspection stations. For example, the per-hour costs calculated above (i.e., $38.80 for the daylight operation period and $39.10 for the 24-hour operation period) can be used as hourly rates to determine the amount of payment to cooperators at other stations in the future.

STATION MANAGER SURVEY

METHODOLOGY

To assess contractor receptivity to expanded hours of operation, the research team also conducted an online survey of all ISDA contractors who operate watercraft inspection stations within the state. The survey questionnaire was designed in consultation with ISDA to identify key areas of interest related to expanded service hours. It covered (1) hours of operation, (2) station support, (3) the contracting process and (4) open-ended responses, while also collecting relevant demographic information for their organization. The research team was responsible for the final wording of the questionnaire.

The survey's target population consisted of station managers only, which encompassed a population of 11 individuals in total (although three of these manage multiple stations). All 11 managers were invited to participate. Contact information for station managers was provided to the research team by ISDA.

The survey was distributed online using the Qualtrics platform. Through Qualtrics, the research team distributed email invitations to all 11 managers, each with a unique link that would allow the respondent to complete the survey once. After one week, those who had not yet completed the survey received a reminder email encouraging them to do so.[15]

In all, of the 11 station managers surveyed, nine responses were collected, giving the survey a response rate of 82 percent. It should be acknowledged that, at nine responses, the survey's very low number limits statistical analysis options. As the entire population of watercraft inspection station managers is only 11, though, the research team is confident that the information gathered is a fair representation of station managers' views on expanded hours of operation.

FINDINGS

DEMOGRAPHICS

Respondents ranged from operating their watercraft inspection stations for less than a year to 11 years. Approximately 78 percent have operated their station for at least seven years. Roughly 56 percent are soil and water districts, while 22 percent are counties. The remaining are cities and tribes.

Respondents reported an average of 15.5 employees in a season, inclusive of full time, part time and seasonal workers. Individual employee counts ranged from 6 to 35 (the higher numbers are presumably from respondents who operate multiple stations). Approximately 57 percent of respondents reported employing less than 15 workers per season. The average wage is $13.20 per hour, with individual responses ranging from $10 to $16.22 per hour. Roughly 67 percent reported that more than half of their employees return from season to season. Within a single season, 87 percent reported a turnover rate of 10 percent or less.

About 22 percent of the managers said they did not feel they are able to find enough employees in their local labor market. Additionally, 44 percent identified particular employment challenges for their stations. Finding workers with flexible schedules and/or the physical requirements for the job were the most frequent challenges cited. One respondent noted that the opening of a nearby manufacturing plant reduced their employee pool, as the plant offers flexible hours, better hourly wages and full time employment. Another cautioned that their experience hiring college students had not gone well.

When asked what approximate percentage of their organization's overall budget the watercraft inspection station agreement constituted, responses ranged from 0 to 85. Approximately 33 percent of managers reported the agreement constituted one-fifth or less of their overall budget, while 22 percent said that it was more than half.

STATION HOURS OF OPERATION

When asked to rate their employees' comfort level with working night hours at their station location, 56 percent said their employees would be uncomfortable (33 percent somewhat uncomfortable, 22 percent *very* uncomfortable). One-third said their employees would be neutral, while only 11 percent felt they would be somewhat comfortable.

Roughly 56 percent of respondents reported that they have already operated during hours with limited or no daylight. Table 3 presents employee comfort levels cross-tabbed by whether their stations have *already* worked non-daylight hours. Of the five respondents whose stations have operated during non-daylight hours, one (20%) reported being somewhat comfortable, one (20%) being neutral, and three (60%) being somewhat uncomfortable. Conversely, among the four respondents who have only worked daylight hours, two (50%) were neutral and two (50%) were very uncomfortable.

About 89 percent of respondents reported having concerns about nighttime operation. All cited safety concerns, particularly lighting and having law enforcement present. One respondent felt that adequate inspections would not be possible at night under limited lighting conditions. Another pointed out that the added need for law enforcement could potentially strain an already limited resource, as law enforcement organizations would not have the necessary personnel to meet the need. Other concerns included lacking electricity at the inspection station, having little to no cell phone service coverage and station locations being remote.

Along similar lines, 56 percent reported having concerns regarding their site's specific location. The most frequent

FIGURE 13: EMPLOYEE COMFORT LEVELS

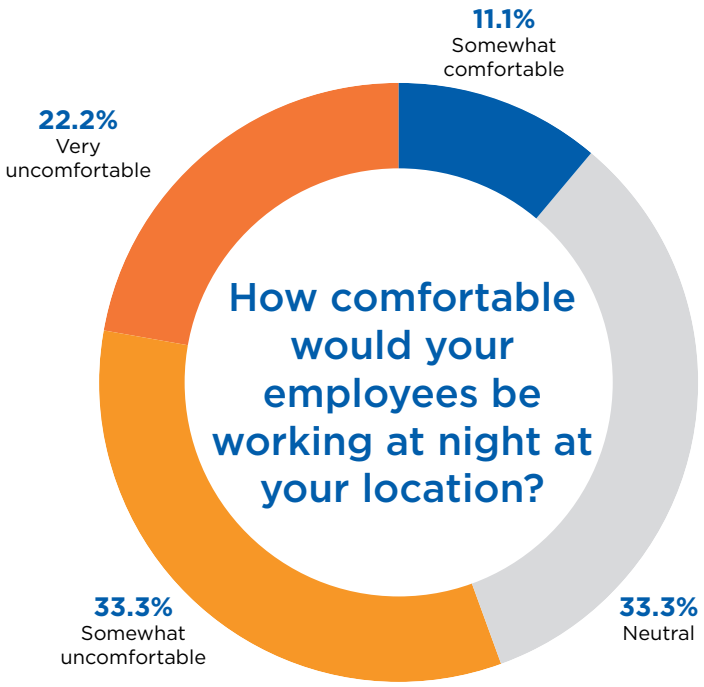
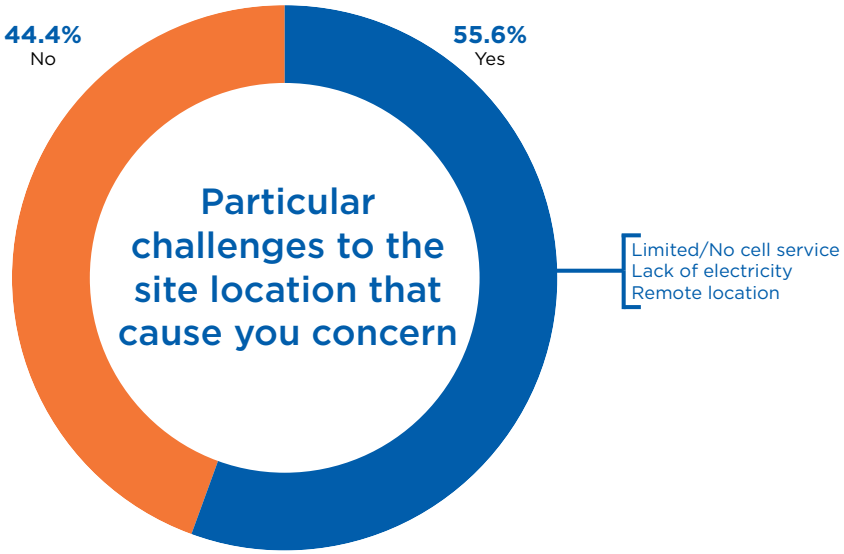


TABLE 3: *EMPLOYEE COMFORT* BY *NON-DAYLIGHT HOUR OPERATION*

Employee Comfort Working Non-Daylight Hours	Operated During Non-Daylight Hours	
	Yes	No
Very comfortable	0 (0%)	0 (0%)
Somewhat comfortable	1 (20%)	0 (0%)
Neutral	1 (20%)	2 (50%)
Somewhat uncomfortable	3 (60%)	0 (0%)
Very uncomfortable	0 (0%)	2 (50%)
Total	5 (100%)	4 (100%)

concerns were, again, little to no cell service coverage, no electricity and crime. One respondent suggested Idaho Power install a power line to stations, given their critical role in keeping the Snake River (from which Idaho Power generates much of its electricity) free of invasive species.

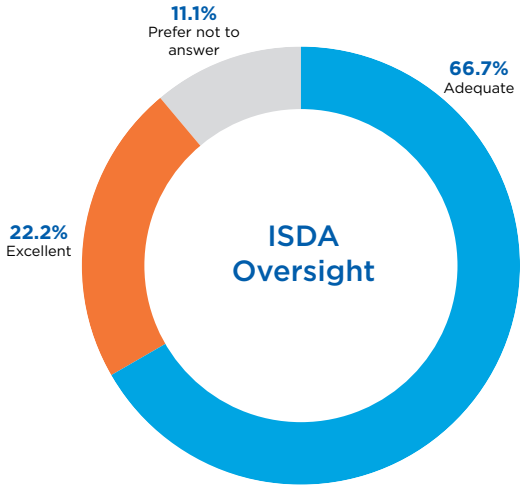
FIGURE 14: SITE CHALLENGES



STATION SUPPORT

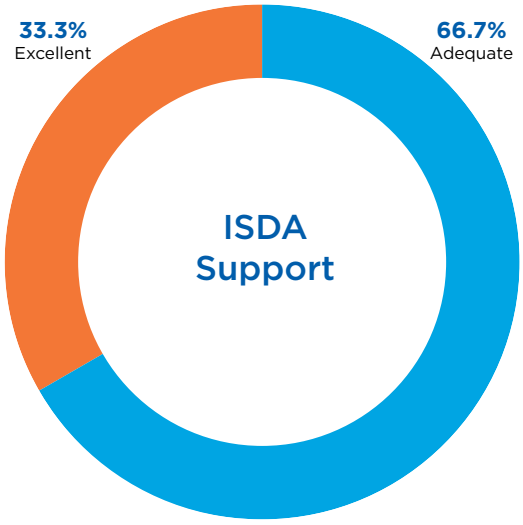
Respondents gave generally favorable marks to ISDA's support of the watercraft inspection station program. Two-thirds (67%) rated ISDA's provided training excellent, while the remaining one-third (33%) rated it adequate. When asked how the training could be improved, one respondent encouraged ISDA to provide higher levels of training for returning inspectors, rather than repeating the same basic training each year. They said, "Inspectors would like to take their knowledge to the next level, but do not have the resources available to do so." Another respondent also encouraged educating inspectors on boats themselves and the specific parts of the boats, so that they have the necessary knowledge of what can and cannot be done during an inspection (such as "when a boater says they can't lower their motor or turn on the bilge pump").[16]

FIGURE 15: ISDA OVERSIGHT RATING



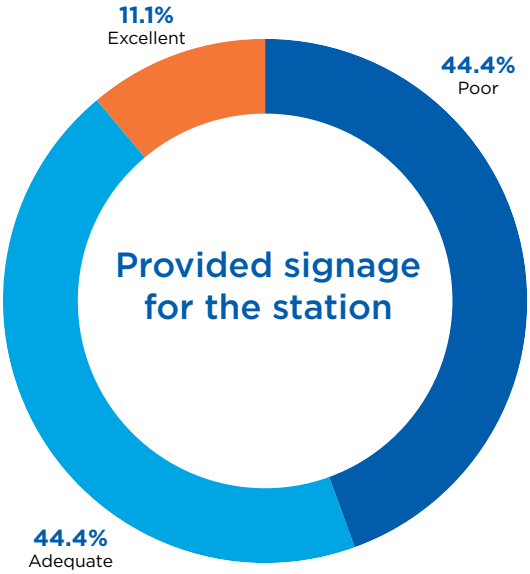
About 67 percent of the managers said ISDA's oversight of the program was adequate, while 22 percent said it was excellent. One respondent (11%) preferred not to answer. When it came to the support ISDA provides, 67 percent rated it adequate and 33 percent rated it excellent.

FIGURE 16: ISDA SUPPORT RATING



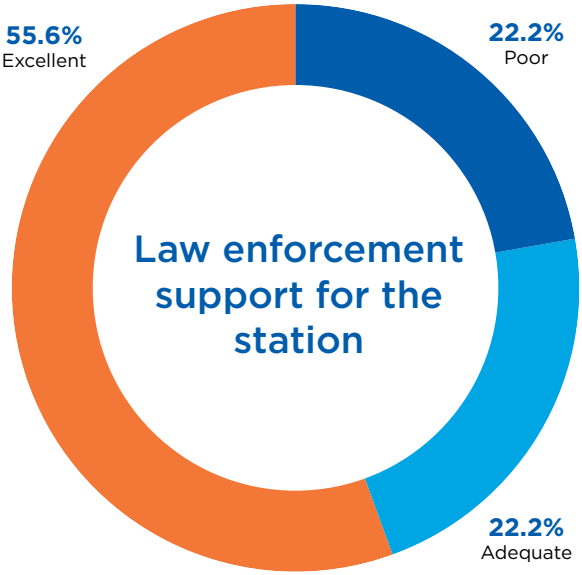
The lowest marks came when rating the station's provided signage. About 44 percent said provided signage was poor. Another 44 percent said it was adequate. Only one respondent (11%) said it was excellent. Additionally, 78 percent of respondents rated the tools they had to capture the necessary boat data as excellent, while 22 percent said they were adequate. None indicated the need for additional tools.

FIGURE 17: SIGNAGE RATING



Responses regarding law enforcement were generally positive, although more mixed. While 56 percent rated law enforcement's support for their station as excellent, 22 percent rated it as adequate and 22 percent as poor. Over half said that the level of support from law enforcement has changed since they first began operating their station. Most indicated that the level of support improved over the past two years and specifically cited the development of contract agreements with local law enforcement organizations. One respondent noted that, even with an agreement in place, law enforcement officials were only actively engaged for approximately two weeks and then absent the rest of the season.

FIGURE 18: LAW ENFORCEMENT SUPPORT RATING



ISDA CONTRACTING

Approximately 44 percent of managers rated the budget provided to their organization under the ISDA cooperative agreement adequate, compared to

56 percent who rated it excellent.

When asked to evaluate the contracting process, about 56 percent agreed that the contracting process is clear, while 11 percent disagreed. The rest of the respondents were neutral. Similarly, 67 percent agreed that the contract process was understandable, while 11 percent disagreed. The rest were neutral.

When shifting to questions on the payment process, 78 percent agreed that the process is clear and the same amount agreed that it is understandable. The remaining 22 percent were neutral on each question.

OPEN RESPONSES

The survey questionnaire closed with a series of open-ended questions that invited managers to share both positive and negative feedback, as well as provide additional comments. These responses are included in Appendix B.

On the positive side of the spectrum, respondents were complimentary of ISDA's professionalism and staff, with several noting that most issues they raised were promptly addressed. ISDA's willingness to amend agreements as issues arise was also singled out for praise.

On the negative side, multiple respondents noted issues with payroll disbursement. Some noted that steps had been taken to mitigate these issues in subsequent years, while others maintained a philosophical difference in accounting practices. One respondent argued that the agreement should include a cell phone for staff to contact ISDA and law enforcement, "since this is part of the protocol for Watercraft inspection stations."

When given the opportunity to raise any additional issues or concerns, most said they had none. One complimented the advancement and simplification of the contracting process since 2009, while another underscored continued issues with signage.

SUMMARY

This study addressed significant issues related to whether to convert operation of inspection stations from daylight hours to 24 hours covering nighttime. These issues included estimating cost and output (i.e., benefit) to be produced by the conversion and understanding contractors' attitudes towards it.

To properly address these issues, this study conducted comprehensive analysis over cost and benefit data from the experimental 24-hour running of the Cotterell station and attitudinal survey data from contractors. The results from cost benefit analysis were not straightforward. Overall, examination of inspections during the period of July 21 – Oct 1 by dividing them into day and night inspections confirmed that greater output measures were produced in daytime than nighttime. While the output measures in the nighttime were comparatively small, a decision on whether they were really negligible requires deliberation among policymakers. When the daylight-hour running period of June 1 – July 20 and the 24-hour running period of July 21 – Oct 1 were compared, the former was higher than the latter in standardized inspection measures; yet, the two periods were virtually indistinguishable in per-hour costs.

The survey of watercraft inspection station managers indicated that most believe their employees would be uncomfortable having to operate their stations during nighttime hours. This discomfort was especially prevalent among those whose stations had not previously operated during non-daylight hours. Additionally, several managers expressed concern over remote station locations, no electricity and limited cell service. Many also expressed a desire for a law enforcement presence should nighttime operations become necessary.

NOTES

1 Otts and Bowling, 2013.
2 Western Regional Panel on Aquatic Nuisance Species, 2009.
3 Dreissena polymorpha (zebra mussels). (n.d.).
4 Ferriter and Anderson, 2015.
5 Zook and Phillips, 2012.
6 Watercraft Inspections. (n.d.).
7 Idaho State Department of Agriculture, 2018, *Memorandum of Understanding between the Idaho State Department of Agriculture and [Station Operator],* Agreement Template.
8 Having two operators is a compounding factor that makes direct comparisons difficult. Specifically, when two time periods of groups are compared, it would be ideal for the two time periods to be exactly the same; with the only exception being the factor in consideration (i.e., conversion to 24-hour operation). For example, when what happened in output or cost because of 24-hour operation is examined, the period before July 21 and the period beginning July 21 might be compared. Substantial differences in output or cost between the two periods can reasonably be attributed to the effect of converting from daylight hour to 24-hour operation. However, if the first period includes a different operator (i.e., ISDA staff) in the daylight-hour operation period, who could be different from the W-C SWCD in unobservable dimensions such as potential capacity or motivations for tasks, one could suspect that the observed output or cost differences might have been caused at least partly by having a different operator, not necessarily by converting from daylight hour to 24-hour operation. Therefore, this study concentrates on the period between June 1, 2017 and Oct 1, 2017 when only the W-C SWCD operated the station.
9 *ISDA staff, Jan 2018, email communications:* "Labor is our number one cost in operating a station… These fixed costs are but a percentage of the cost of labor…"
10 *ISDA staff, Jan 2018, email communications:* "Cooperators will have some fixed costs that are there regardless of hours of operation. Shed rental, portable lavatories, and phone/internet costs are all examples of fixed costs that are there no matter how many hours a station operates. These fixed costs are but a percentage of the cost of labor, but they are there and our method of budgeting for the stations does account for the need to meet a number of fixed costs separate from labor and regardless of the number of days a station operates."
11 www.timeanddate.com
12 www.timeanddate.com
13 Information of sunrise and sunset times was obtained for Boise, Idaho, from Time and Date (www.timeanddate.com).
14 ISDA. *Invasive Species 2017 Watercraft Inspection Program*. p. 22
15 During the response period, one respondent reached out to the research team, explaining that they had mistakenly closed out their survey session without fully answering the questions. The research team reactivated their session and their earlier (incomplete) responses were discarded from analysis.
16 The questionnaire also inquired about the sale of Invasive Species Fund stickers. These results can be found in Appendix A, see Q21, Q21a and Q21b.

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APPENDIX A: SURVEY FREQUENCY TABLE

#	Question/Response	N	%
Q1	*How long, approximately, has your organization been a cooperator in operating watercraft inspection stations?*		
	Less than a year	1	11.11
	1 year	1	11.11
	7 years	1	11.11
	8 years	2	22.22
	9 years	2	22.22
	10 years	1	11.11
	11 years	1	11.11
Q2	*Which of the following types would your organization be classified as?*		
	Soil & Water District	5	55.56
	County	2	22.22
	City	1	11.11
	Tribe	1	11.11
Q3	*Approximately how many people do you employ in a season for the watercraft inspection program? (Include full time, part time, and seasonal workers)*		
	6 to 8	1	11.11
	7	1	11.11
	8	1	11.11
	9	1	11.11
	13	1	11.11
	21	1	11.11
	23	1	11.11
	25	1	11.11
	35	1	11.11
Q4	*What is the average hourly wage for each employee?*		
	10	1	11.11
	12	1	11.11
	12.25	1	11.11
	12.35	1	11.11
	12.75	0.5	5.56
	13.5	1	11.11
	13.94	1	11.11
	14	1	11.11
	15	0.5	5.56
	16.22	1	11.11

#	Question/Response	N	%
Q5	*Approximately what percentage of your employees return each season?*		
	40%	1	11.11
	50%	3	33.33
	75%	1	11.11
	80%	1	11.11
	90%	1	11.11
	Unknown	2	22.22
Q6	*What is the approximate turnover rate of inspection station employees during the season? (in percentage)*		
	0%	1	11.11
	1%	1	11.11
	2%	1	11.11
	4%	1	11.11
	10%	4	44.44
	[Blank]	1	11.11
Q7	*How strongly would you agree or disagree with the following statement: In my local labor market, I feel I am able to find enough employees.*		
	Strongly agree	4	44.44
	Agree	3	33.33
	Neither agree nor disagree	0	0
	Disagree	2	22.22
	Strongly disagree	0	0
	Prefer not to answer	0	0
Q8	*Have you encountered any particular challenges in finding employees to work at your station(s)?*		
	Yes	4	44.44
	No	5	55.56
Q8a	*Please describe those challenges in the space provided below.*	See Appendix B	
Q9	*On a scale of Poor to Excellent, how would you rate the training provided by the Idaho State Department of Agriculture (ISDA) to conduct watercraft inspections?*		
	Poor	0	0
	Adequate	3	33.33
	Excellent	6	66.67
	Prefer not to answer	0	0
Q10	*Do you have any recommendations for changes or improvements to ISDA's watercraft inspection training?*	See Appendix B	

#	Question/Response	N	%
Q11	*In your estimation, how comfortable would your employees be working at night at your particular location?*		
	Very comfortable	0	0
	Somewhat comfortable	1	11.11
	Neutral	3	33.33
	Somewhat uncomfortable	3	33.33
	Very uncomfortable	2	22.22
	Prefer not to answer	0	0
Q12	*On a scale of Poor to Excellent, how would you rate the following elements of the watercraft inspection program?*		
Q12_1	*ISDA oversight*		
	Poor	0	0
	Adequate	6	66.67
	Excellent	2	22.22
	Prefer not to answer	1	11.11
Q12_2	*ISDA support*		
	Poor	0	0
	Adequate	6	66.67
	Excellent	3	33.33
	Prefer not to answer	0	0
Q12_3	*Provided signage for the station*		
	Poor	4	44.44
	Adequate	4	44.44
	Excellent	1	11.11
	Prefer not to answer	0	0
Q12_4	*Law enforcement support for the station*		
	Poor	2	22.22
	Adequate	2	22.22
	Excellent	5	55.56
	Prefer not to answer	0	0
Q13	*Has the amount of law enforcement support changed since you first operated the station?*		
	Yes	5	55.56
	No	4	44.44
Q13a	*Please describe how it has changed in the space provided below.*	See Appendix B	
Q14	*Are there any particular challenges to the site location that cause you concern?*		
	Yes	5	55.56
	No	4	44.44

#	Question/Response	N	%
Q14a	*Please describe those challenges in the space provided below.*	See Appendix B	
Q15	*Have you operated during hours with limited or no daylight?*		
	Yes	5	55.56
	No	4	44.44
Q16	*Do you have any concerns related to nighttime operation?*		
	Yes	8	88.89
	No	1	11.11
Q16a	*Please describe those concerns in the space provided below.*	See Appendix B	
Q17	*On a scale of Poor to Excellent, how would you rate the tools you currently have to capture necessary boat data?*		
	Poor	0	0
	Adequate	2	22.22
	Excellent	7	77.78
Q17a	*What additional tools would you like to help capture necessary boat data?*	See Appendix B	
Q18	*On a scale of Poor to Excellent, how would you rate the budget provided to your organization under the cooperative agreement?*		
	Poor	0	0
	Adequate	5	55.56
	Excellent	4	44.44
	Prefer not to answer	0	0
Q19	*How strongly would you agree or disagree with the following statements:*		
Q19_1	*The contract process is clear*		
	Strongly agree	1	11.11
	Agree	4	44.44
	Neither agree nor disagree	3	33.33
	Disagree	1	11.11
	Strongly disagree	0	0
	Prefer not to answer	0	0
Q19_2	*The contract process is understandable*		
	Strongly agree	1	11.11
	Agree	5	55.56
	Neither agree nor disagree	2	22.22
	Disagree	1	11.11
	Strongly disagree	0	0
	Prefer not to answer	0	0

#	Question/Response	N	%
Q19_3	*The payment process is clear*		
	Strongly agree	0	0
	Agree	7	77.78
	Neither agree nor disagree	2	22.22
	Disagree	0	0
	Strongly disagree	0	0
	Prefer not to answer	0	0
Q19_4	*The payment process is understandable*		
	Strongly agree	0	0
	Agree	7	77.78
	Neither agree nor disagree	2	22.22
	Disagree	0	0
	Strongly disagree	0	0
	Prefer not to answer	0	0
Q20	*What approximate percentage of your organization's overall budget does the watercraft inspection station agreement constitute?*		
	0	1	11.11
	14	1	11.11
	20	1	11.11
	45	1	11.11
	46	1	11.11
	70	1	11.11
	85	1	11.11
	[Blank]	2	22.22
Q21	*Do you sell Idaho Invasive Species Fund stickers at your station?*		
	Yes	3	37.5
	No	5	62.5
Q21a	*Would you be interested in selling Idaho Invasive Species Fund stickers at your station?*		
	Yes	3	60
	No	2	40
Q21b	*On average, how many Invasive Species Fund stickers do you sell at your station in a year?*		
	750	1	33.33
	5000	1	33.33
	7550	1	33.33
Q22	*Have there been issues or concerns related to your cooperative agreement that you feel were addressed in a positive way?*	See Appendix B	

#	Question/Response	N	%
Q23	*Have there been issues or concerns related to your cooperative agreement that you feel were addressed in a negative way?*	See Appendix B	
Q24	*If you have any other issues or concerns related to your cooperative agreement that you feel have not been/ need to be addressed, please describe them in the space provided.*	See Appendix B	

APPENDIX B: SURVEY OPEN ENDED RESPONSES

(Q8a) Have you encountered any particular challenges in finding employees to work at your station(s)? [If Yes] Please describe those challenges in the space provided below.

- College students have not served well as a rule. Have one long term person that is a solid rehire and is using these wages to pay for his college costs. Wages pay a large part in this as the law enforcement inspectors must be level one certified and had gun qualified and a ISP Post graduate in order to be insured and allowed to operate a pursuit vehicle.
- Finding workers with flexible schedules, physically capable, and dedicated to working during the summer season.
- In todays society no one wants to work. They expect everyone to give it to them
- Recently a stone manufacturing plant has opened up with flexible hours, higher hourly wages, with full time hours. We used to be able to fill positions easier and pay a little less however now we have to compete for the local work force.

(Q10) Do you have any recommendations for changes or improvements to ISDA's watercraft inspection training?

- The ISDA Instructors conduct a quality training session and several law enforcement officers have remarked that this training is the best, most through and detailed that they have received.
- no
- Provide an option for a higher level of training to returning inspectors, rather than the basic level of training every year. Inspectors would like to take their knowledge to the next level, but do not have the resources available to do so.
- Train more to the national standards and dont reinvent the wheel
- ISDA has very intelligent staff who are extremely capable of training our check station employees.
- none
- Showing boats and the parts of the boat is very helpful also teaching the inspectors how boats operate would give them more knowledge when a boater says they cant lower their motor or turn on the bilge pump.
- No. Would like training to expand to local marine stores, but that could be handled by local district.

(Q13a) Has the amount of law enforcement support changed since you first operated the station? [If Yes] Please describe how it has changed in the space provided below.

- Law enforcement has become more supportive and involved in more recent years as the program has grown.
- People are more compliant when law enforcement is there.
- Law enforcement improved when a contract with the County deputies was developed.
- In the past we have not had law enforcement present, however the past 2 years there have been agreements made with local law enforcement but they only show up for about 2 weeks and then no presence the rest of the season. This year we are operating 18 hors so ISDA has made an agreement to have law enforcement present for dark hours.
- Only supported the last 2 years, but it has been very helpful.

(Q14a) Are there any particular challenges to the site location that cause you concern? [If Yes] Please describe those challenges in the space provided below.

- The Bruneau station is remote and in need of power, have operated in the past with a generator to supply power. Thus night operations would be challenging as to lighting the area and additional law enforcement inspectors would be very difficult to hire. The ranks of law enforcement officers with the required training are in short supply. There are not enough trained officers to supply the demand.
- Low to no cell service, no power at 1 station, no lighting for nighttime operations.
- Our sight is on the desert where it is so hot in the summer and we have no power for air conditioning or refrigeration. If we could get Idaho Power to drop a line for power it would make the station more efficient, instead of running everything through gnerators. I think the work being done to protect our waters should be a priority to a company like Idaho Power that relies heavily on the Snake River.
- No electricity. Without electric in our building I worry about the building being dark at night.
- The Samuels Station had a break in last year - unsavory neighbors in the area. It would be a challenge to have it open at night. I would recommend one security person as an inspector if any of our3stations were open at night.

(Q16a) Do you have any concerns related to nighttime operation? [If Yes] Please describe those concerns in the space provided below.

- Safety of inspectors and need for law enforcement officers to be on station at all night time operations. The number of available law enforcement officers are limited. We need to work with Idaho State Police to provide training for additional officers. Also each officer that is hired must be approved by the Owyhee County Sheriff as it is Owyhee County's insurance coverage that allows us to operate.
- Not enough lighting, 1 station is located in area where crime is possible, no cell service in case of an emergency.
- Safety of employees
- I have two concerns, 1)Can we get enough light out there to make it safe for my staff. 2) Will an officer be present at all times during nighttime hours.
- safety issues. Lighting to adequately do an inspection. finding staff for overnight shifts
- The lighting is limited, don't feel at night you are able to inspect as well. Also the safety of the workers in a remote area, the dark just makes it a little more unsafe.
- I just hope we have law enforcement present during dark hours and the lack of electric are the only issues I see that could cause us concern.
- Would need one armed security officer as an inspector. All sights at night would be considered remote with no one nearby to help.

(Q17a) On a scale of Poor to Excellent, how would you rate the tools you currently have to capture necessary boat data? [If Poor] What additional tools would you like to help capture necessary boat data?

- [No responses collected]

(Q22) Have there been issues or concerns related to your cooperative agreement that you feel were addressed in a positive way?

- There have been several issues that have been worked out with the cooperation with ISDA staff.
- The one challenge we had in our first year, was addressed in the year end meeting. IDA made changes in our current MOU to fix this problem. it was a very positive experience
- The amendment for ISDA to pay for signs leased by our conservation district.
- no
- I have had questions through the years that have always been addressed professionally.
- the change in the funding with the increased percentage included in the first allocation.
- They responded always in a timely manner when there was an issue.
- Payments. The agreement this year seems like it will be better funded then in years past. The Board feels like the contracted amount should be given at the beginning of the season and the balance if any would be returned at the end of the season.
- Yes. Attempting this year to get the agreements to the contractors by the beginning of the calendar year. Adding signage to our 2017 agreement.

(Q23) Have there been issues or concerns related to your cooperative agreement that you feel were addressed in a negative way?

- There were issues in the cooperative agreement for 2017 that were of concern. These issues were addressed by ISDA staff and we reached a positive result with no issues of concern in the 2018 cooperative agreement.
- no
- In the past, there have been issues with disbursement of funds for payroll purposes.
- no
- I have never been treated negatively about any issues.
- we differ in our believe of the payroll accounting and audit cost as a administrative cost. We believe this is a direct charge or we receive a cost increase due to the ISDA contract
- Just poor communication, but they had a lot of turn over this past year.
- We feel the agreement should cover a cell phone to contact ISDA and law enforcement since this is part of the protocol for the Watercraft inspection stations.
- Yes. 2016 year was terrible - lack of ISDA support for the program and lack of communication between ISDA and legislature in funding the program.

(Q24) If you have any other issues or concerns related to your cooperative agreement that you feel have not been/need to be addressed, please describe them in the space provided.

- The ISDA Staff have provided good support and understanding of the challenges that occur when, equipment malfunctions,& there are problem WIFI connections. There have been changes in requirements for financial reports that were different from the cooperaive agreement, we have cooperatively worked to resolve these issues and with this continued cooperation look forward to 2018 season.
- NA
- no
- none
- We are still having some issues with the signage that we hope will be resolved this season.
- From 2009 to 2015 major advancements and simplifying in contracting process. Continue to respect contractors and their needs and the value of their service. Bottom line - keep the AIS out of Idaho.

This report was prepared by the Idaho Policy Institute at Boise State University and commissioned by the Idaho State Department of Agriculture.

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