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January 14, 2025

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Ms. Gutierrez,

In accordance with Condition of Certification BIO-19, please find enclosed the Quarterly Evaporation Pond Monitoring Report for the period from October to December 2024.

Should you have any questions please feel free to contact me.

Sincerely,

Mahnaz Ghamati

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Attachments: Evaporation Pond Plan Quarterly Report for October- December 2024.

Quarterly Evaporation Pond Monitoring Report

For October-December 2024

Mojave Solar Project

09-AFC-5C

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January 2025

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1 Introduction

The MSP facility has four evaporation ponds, two in Alpha (denoted as A-E and A-W for their respective east or west positions within the Alpha portion of the plant) and two in Beta (B-E and B-W) (Figure 1). The California Energy Commission (CEC), in Condition of Certification BIO-19, requires that prior to the operation of the evaporation ponds a final Evaporation Pond Monitoring and Adaptive Management Plan (Evaporation Pond Plan) be approved.

BIO-19 requires monthly reporting for the first year if a technology other than netting is used. Reporting may be reduced to quarterly thereafter if no bird or wildlife deaths are reported during the first year. After the first year, monthly monitoring will continue pending approval of the Evaporation Pond Plan with on-going communication between MSP and the CPM. The plan states that reports will be provided quarterly if netting is used. This report provides a summary of avian and non-avian monitoring at MSP's evaporation ponds and the Harper Lake Area of Critical Environmental Concern (ACEC). Final BIO19 Evaporation Pond Plan, BIO19-00-08 Evaporation Pond Monitoring and Adaptive Management Plan, Rev. 6. (Mojave Solar Project 09-AFC-5C) submittal approved on March 8, 2017.

This report covers the period of October through December 2024.

2 Methods

2.1 Deterrent Deployment

The BIO-19 Evaporation Pond Monitoring and Adaptive Management Plan defines netting as the "final deterrent" and states that deterrents or netting will be used at the ponds. As such, the Eagle Eyes and BirdGard deterrents were removed from the ponds as each pond was netted.

The specifications for the deterrent technologies are provided below:

- **Visual Deterrents (Eagle Eyes):** The Eagle Eye unit uses a reflective pyramid that rotates to reflect sunlight, creating a menacing pattern with the moving beams of light. The ever-changing light spectrum reflected by the Eagle Eye disorients birds in flight by significantly limiting their vision, causing them to deviate in flight and go elsewhere. The systems are either wind-powered or use a 12-volt electric battery to rotate the reflective pyramid. The battery may be charged by a small photovoltaic cell. It can be used to deter resident birds. Eight Eagle Eyes (4 red

wind driven and 4 silver electrically driven) are installed around each pond perimeter for total of 32 units installed at the four ponds.

- **BirdGard:** This device uses digital recordings of species-specific distress and alarm calls, along with the sounds of a bird's natural predators are broadcast through high fidelity weather-resistant speakers to convince birds they are under attack and drive them away.

BirdGard was implemented July 27, 2016, and the use of the propane cannons was discontinued. Due to the fatalities of a Mallard Duck in the Beta East evaporation pond on August 2nd and a California Gull in the Beta East evaporation pond on August 16th, adaptive management was triggered pursuant to BIO-19, for the 3rd quarter of 2016. On August 23rd, 2016, MSP requested CPM approval to modify the existing technology by changing the chip card that manages the sounds to avoid that the birds get comfortable or familiar with the kind of sounds emitted by the device (BIO19-22-00).

In an email received September 16, 2016, the CPM did not approve this proposal. MSP then, as per CPM recommendations, requested for approval on September 27th, to redeploy the cannons in addition to changing the chip card and keeping the Eagle Eyes, periodically rotating implementation of these technologies. MSP also proposed installing a water cannon system with high flow in all the ponds to hinder the birds from finding a proper spot in the ponds for perching or staying on the water. After observing the effects of the current evaporators in use at the Alpha ponds, this seems to be a working system for bird deterrents. On October 7th, 2016, CEC requested information by email on the water cannons; how many cannons per pond, how would they be triggered to go off, and which particular type of cannon would be installed. On October 11th, 2016, MSP sent an email response to CEC stating there would be 2 to 6 cannons deployed per pond, depending on final model and layout. They would go off automatically and would most likely be the Landshark model or a product similar to this.

A meeting was held on December 14, 2016, between MSP and CEC to discuss the proposed Adaptive Management. Topics discussed were the operation schedule of the water cannons, time of year cannons are to be used, would cannons affect existing evaporators, water flow rates, power source, how many cannons per pond, how they would be turned on, and brand or model type. An email was sent by MSP on December 21st, 2016, answering all the questions the CEC had from the meeting. Final approval from the CEC received on February 27, 2017. As per the email received, "Staff approves the proposed adaptive management measure submitted on September 27, 2016. Please do not implement the final deterrents until the final Evaporation Pond Monitoring and Management Plan (BIO-19) is approved." and later confirmation from the CEC CPM, the expected date of implementation for the new deterrent is May 31, 2017. MSP asked for

an extension on the implementation of the water cannon on 5/21/2017. Extension was granted until June 30th, 2017, on May 22, 2017. Due to the presence of nesting birds at the pond, MSP asked for and was granted another extension until August 31 to install the water cannons. The MSP DB determined that the risk to these nesting birds was too great to allow construction activities at the ponds until the chicks had fledged.

Placement of rental water cannons took place on Tuesday, August 2nd 2017 in Alpha West Pond and the units were tested for two weeks to assess coverage, efficiency, and numerous mechanical/technical parameters. Full deployment of the water cannons at all the ponds and thus daily Point Counts at the ponds and ACEC began on 10/10/2017. MSP suspended the use of the Water Cannons as per CEC communication dated November 3rd 2017 ("Staff directs Abengoa Mojave Solar to suspend use of the Landshark water cannons until further notice. Staff is reviewing the mortality reports to determine if the water cannons should continue to be used").

In an email dated 1/29/2018, the CEC staff directed the DB to halt the remaining deterrents "Just wanted to update you that a formal response to the Notification of Adaptive Management will be coming shortly. As stated previously, the final adaptive management trigger occurred on October 16 and 17, 2017 with the deaths of two western grebes at the Beta West evaporation pond. During our site visit on 1/24 we can discuss if halting use of the remaining deterrents is appropriate".

In an email received on February 5, 2018, the CEC staff stated: "BIO-19: I coordinated with USFWS regarding the BIO-19 question from the site visit regarding halting use of deterrents. The agencies recommend that MSP maintain and repair deterrents until we can make a determination about the netting. In general, deterrents may have some benefits to naive individuals (i.e., young or migrating individuals), so there may still be some benefit to the deterrence. If there are particular repairs or maintenance that is costly or requires significant resources, we can discuss whether they make sense."

In an email dated January 24, 2020, the CEC staff stated "Staff has discussed this with the USFWS, and they are in agreement that the ponds should be netted. MSP is advised that to remain in compliance with BIO-19 the project owner shall begin installation of netting at the evaporation ponds, per the requirements of BIO-19." "In addition, avian monitoring may be reduced to monthly, per the approved BIO-19 Plan, until the ponds are netted." The Mojave Solar Project (08-AFC-3C) Compliance Advice Letter For BIO-19, dated January 23, 2018, specifies that MSP has 60 days from notification to begin installation of netting. Accordingly, MSP planned to commence installation of netting at

the ponds within the permitted period and avian monitoring will be reduced to monthly beginning February 2020.

Due to the COVID 19 pandemic, the CEC granted postponing the installation of the pond netting until the further notice. On May 21, 2021, because of the lifting of the “stay at home” order for San Bernardino County, CEC notified MSP of its intent to request that MSP initiate installation of the pond netting. CEC also requested additional information on the scope of work, design specifications, schedule, and status of nesting birds which MSP provided via email on May 26, 2021. Installation of netting on the Beta West Pond began in early September 2021 and was completed at the end of October 2021. Installation of netting at the remaining ponds was delayed due to issues with the netting contractor. Installation of netting on the Beta East Pond began in October and was completed in December 2023. Installation began on the Alpha ponds in December 2023 and was completed at the end of April 2024.

2.2 Monitoring

The Designated Biologist (DB) is responsible for ensuring that the CPM-approved avian monitors (avian monitors) are trained and qualified to implement the Evaporation Pond Plan requirements. Currently, all monitoring is performed by the DB.

2.2.1 Transect Survey Protocol

To improve the value of data collected, monitors started using a transect approach to survey avian activity, as directed by CPM starting November 1, 2016. Monitors slowly walk and/or drive the perimeter of each evaporation pond (approximately 30 minutes around each set of evaporation ponds) and record bird observations for individuals within the pond area as defined in the latest draft of the Evaporation Pond and Adaptive Management Plan. A slow pace will not significantly deter birds, because any present individuals are presumed tolerant of general site activity. Birds observed from the transect lines but occurring outside of the defined area of the evaporation ponds, will not be recorded. Hard copy or electronic datasheets will be used to record observations at the evaporation ponds and ACEC (Appendix B).

During surveys, the avian monitor recorded the following information on observed species on a hard copy datasheet:

- Station identification number
- Date
- Survey start/stop time

- Observer
- Monitoring Purpose (daily or bi-weekly)
- Wildlife exclusion/deterrent technologies operation status (if applicable)
- Weather (including precipitation, temperature, wind, and percent cloud cover)
- Species (under rare conditions, e.g., low-light or backlighting or if bird is in a difficult to distinguish plumage phase or molting, the bird was identified to functional group)
- Functional group classification based on De Graaf et al. 1985
- Number of individuals
- Behavior (flythrough, flyover, foraging, nesting, perched, standing/walking, swimming/wading/diving, vocalization)
 - Nests are only documented in the surveys if they are “at the evaporation ponds” as defined by CPM emails dated February 19 and 25, 2015.
 - If the bird(s) were observed on a nest, the location was recorded using a global positioning system (GPS) unit.
 - If the bird(s) were found perching or nesting, detail was recorded pertaining to the type of perch (fence, trough, pond feature (measuring stick, outlet pipes), deterrent, machinery, other permanent feature, other temporary feature, transmission/power line, or vegetation.
- Location of observation
 - Distance and direction of the observation from the station
 - Pond (A-E, A-W, B-E, B-W) or ACEC
- Fatalities, injuries, or physical infirmities (e.g., birth defects or reduced growth)
- Special-status species (state or federally protected, excluding those species only protected under the Migratory Bird Treaty Act)

During this monitoring period, observed behaviors are defined to standardize interpretation:

- Flythrough is considered flying low through vicinity and interacting with site and or ponds.
- Flyover is considered passing overhead at distance and not interacting with site or ponds.

- Nesting activity is defined as active nest building, nest occupation, or dependent chicks. Nest inactivity is when the adults and fledglings are no longer dependent on the nest location.
- Perched is defined as above ground level.
- Standing/walking is defined as on ground level.
- Vocalizations where number of individuals cannot be confirmed are recorded as one individual.

Transect surveys were scheduled at times of high bird activity. Morning surveys began no later than one hour after sunrise and evening surveys ended within one hour of sunset. The order in which transects were surveyed was systematically rotated by surveying them in a different sequence or direction so transects were surveyed during different times throughout the morning or afternoon/evening survey period.

The BIO-19 Plan states that “description of avian activity at the ponds” is not required if the ponds are netted. Accordingly, transect surveys were discontinued during April 2024. Additional monitoring at the ponds will proceed as outlined in the Plan.

2.2.2 Incidental Daily Observations

During biological monitoring duties, the DB intermittently visited the evaporation ponds. During these visits, the DB made incidental observations of avian and non-avian wildlife. These observations were recorded in field notebooks. The DB then reports them to the agencies and project owner as necessary.

2.2.3 Other Monitoring

During transect surveys and incidental observations, biological staff monitored for the following BIO-19 adaptive management triggers: 1) dead birds at the evaporation ponds, 2) special-status animals at the evaporation ponds, and 3) noise levels attributable to the deterrent technology exceeding 60 dB at the Harper Lake ACEC wetlands. The DB reports observations to the project owner who determines whether adaptive management under BIO-19 was triggered, and then reports it to the agencies as necessary.

If adaptive management is triggered, MSP has 10 days to notify the CPM of the incident and propose an adaptive management action to be implemented. Based on the approved Evaporation Pond Plan, MSP has 60 business days after CPM approval to acquire the proposed deterrent(s) and implement the adaptive management action.

Since netting the ponds was completed and netting is considered the “final deterrent option,” “Other Monitoring” as described in this section is discontinued. Monitoring at the ponds will continue as outlined in Sec. 3.2.4 Monitoring If Netted of the BIO-19 Plan.

2.2.4 Monitoring If Netted

The BIO-19 Plan (Rev. 6, Sec. 3.2.4) states “If the ponds are netted, the DB or the CPM-approved avian biologist or monitor will monitor the ponds at least monthly to ensure that the netting is in place and functioning properly, and properly and record any avian/wildlife mortalities per section 3.2.4. They will also monitor the ponds after storm events when winds exceed 25 mph to ensure that the nets are in place and functioning properly.”

MSP submitted Revision 8 of the plan on October 19 and CEC approved the revision on October 27, 2021. This revision included the following language for monitoring netted ponds: “In addition to monthly monitoring of the pond netting and avian mortalities, the DB or CPM-approved avian biologist will survey the ponds for birds that may have become trapped inside the netting and or stranded/injured on top of the netting during routine compliance visits and MSP personnel will similarly survey the netting during weekly evaporation pond inspections. Initially the ponds will be surveyed weekly at a minimum. If strandings/fatalities are found not to be an issue, this schedule may be reduced with approval of CEC.”

3 Reporting Requirements

3.1 Monthly/Quarterly Reports

On November 12, 2014, the CEC instructed MSP to begin deploying deterrents. The CEC provided verbal and written direction to the Designated Biologists in November and December 2014 requesting a monthly monitoring report. Prior monthly reports in response to those requests are consistent with the requirements of BIO-19, which requires a monthly report for the first year of deterrent operation when a technology other than netting is used.

On June 26, 2015, MSP submitted a revised Evaporation Pond Plan (Revision 4.3) to the CPM for review and approval. Section 5, of that plan establishes the following reporting requirements, which are essentially the same as the Rev. 6 of the approved BIO-19, Evaporation Pond and Adaptive Management Plan:

If non-net technology is used, monthly monitoring reports will be prepared by the DB and/or CPM-approved avian biologist and submitted to the CEC for

review. Reports will include a summary of monitoring activities, a description of avian and wildlife activity at the evaporation ponds, and any fatalities found in or around the evaporation ponds, and any adaptive management responses implemented or changes to deterrent deployment. In addition, reports will include all the raw data collected, including photocopies of data sheets completed during monitoring. Reports will also include a cumulative list of birds observed organized by bird family and include a notation identifying the season in which the bird was observed and whether the bird was observed at the ACEC or an evaporation pond (including pond identification). Water quality test results will be reported per the requirements of the DMP.

If netting is not used, monthly reports will be provided during the first year of operation of the ponds. Provisions are included in BIO-19 to reduce reporting to quarterly if no bird or wildlife deaths are reported during the first year. Consistent with this allowance, reports will be provided quarterly following any year where no bird or wildlife deaths are reported.

If netting is used, reports will be provided quarterly.

This quarterly report follows those reporting requirements.

On October 21st, 2016, CEC approved decreasing avian point counts from weekdays to weekly (once a week) and allowing fatality monitoring by Operations staff on other days (see below Section 3.2.3) according to Rev. 8 of the approved BIO-19, Evaporation Pond and Adaptive Management Plan:

3.2 Avian Monitoring Reduction

During the implementation of a new wildlife deterrent/exclusion technology, CPM-approved biologist or the biological monitors will monitor the evaporation ponds and Harper Lake ACEC wetlands once a week using transect surveys, or other protocol approved by the CPM. When weekday monitoring is required, weekend and holiday monitoring will be conducted by site staff (includes non-biologists) for fatalities only. If a carcass is discovered at a time when an approved biologist or monitor is not on-site, the site staff will document the carcass, which includes photographing the carcass, and recording the standard information on the data sheets. If the carcass is on land, it will be covered with a cone or bucket and secured to ensure the carcass remains until an approved biologist or monitor is back on site and can properly identify and document it. If in the water, the staff person will record on a map where the carcass is located, take photos, and record other information on the standard data sheet, and notify the biological staff or ECM the same day of the finding. The next time the avian

biologist is on-site, they will attempt to locate the carcass, identify it, and safely retrieve the carcass.

Once it is established that the new deterrent/exclusion technology does not disturb birds using the marsh, monitoring at the ACEC will be reduced to monthly.

Depending on the results of the daily monitoring at the ponds of new deterrents/ technologies, BIO-19 allows monitoring efforts to be decreased to weekly, bi-weekly or monthly. As discussed in Section 2.1 above, MSP reduced the monitoring frequency to monthly beginning February 2020.

The DB on site trained operations staff on how to conduct the fatality monitoring and paperwork required if a carcass was found. As applicable, operations staff texts or emails results to the DB with results of the day's monitoring.

3.3 Water Quality

Beginning April 2020, MSP discontinued water sample collection as requested, due to the netting installation. The CEC granted this request on March 12, 2020. In an email dated August 9, 2021, CEC directed MSP to resume "water quality monitoring per the approved BIO-19 Plan until netting installation is complete at each pond." Monthly water quality sampling resumed in September 2021 and discontinued in April 2024 as the pond netting was completed.

The BIO-19 Plan also requires annual monitoring of water quality through invertebrate sampling to "further assess impacts to bird or other wildlife species." The results of this monitoring have been presented annually as stand-alone reports through 2023. The BIO-19 Plan states that water quality monitoring, which includes the macro-invertebrate sampling, will no longer be needed if the ponds are netting. Per the plan, this sampling was discontinued after the ponds were completely netted in 2024.

Ninyo & Moore is under contract to conduct water quality testing in accordance with the Detection Monitoring Program and Ground Water Monitoring Plan (Ninyo & Moore 2016). Therefore, the water quality data for this period is being reported by Ninyo & Moore under separate cover.

4 Monitoring Results

4.1 Evaporators

On June 27th, 2016, three evaporators were deployed into the Alpha West evaporation pond. A small control house was installed on the shore of the southwest corner of the

pond, inside of the pond perimeter fence. The evaporator units were initially situated on the far west side of the Alpha West Pond, about 15 meters from the west shoreline.

On June 29, 2016, the evaporators were tested by the supplier and by MSP staff. On June 30th, MSP began operating the evaporators. Since initiating the evaporators, MSP has reconfigured the three evaporators multiple times, in attempts to reduce overspray from escaping the pond liner and optimize evaporation. The relative positions of the evaporators changed in April with the removal of one evaporator from Alpha-West evaporation pond and its placement, along with a new evaporator, into Alpha-East evaporation pond.

On June 5th, 2017, four new evaporators began operating on Beta West and Beta East ponds (two on each pond). The operational parameters used for the evaporators on Alpha ponds were incorporated for the operation of the evaporators on Beta ponds.

The evaporator control house has a weather gauge that reads three factors: temperature, wind, and humidity. The evaporators shut down if any of the three factors exceed specific levels that lower evaporation efficiency. The evaporators were removed from the Beta West Pond in September 2021 as netting installation commenced. The evaporators and associated control houses were removed from Beta East in October 2023 and from the Alpha ponds in November 2023 as netting of the ponds commenced.

MSP communicated with CEC regarding the use of SMI Super Polecat Evaporators to replace the existing evaporators when the ponds are netted. CEC approved their use in a letter dated 3/17/23. MSP deployed one Polecat evaporator at the Alpha East Pond in early August 2023 to test its effectiveness. The evaporator is contained inside a chain link cage covered with the same 1" mesh netting used to cover the beta pond. Due to the pond water conditions, the evaporator could only be operated for approximately one week before needing maintenance. As a result, MSP deployed an additional evaporator at the alpha east pond so that one was operational while the other was down for maintenance. MSP staff and the DB monitored the evaporators to ensure that birds did not become trapped in the netted enclosures. Birds avoided the evaporators while they were operating. After testing the Polecat evaporators, MSP determined that they were not suitable for use due the high level of maintenance necessary to keep them operational. The Polecat evaporators were removed from the Alpha ponds in November 2023.

Subsequently, MSP communicated with CEC regarding the use of PittBoss Sprayer-less Evaporators to replace the existing evaporators when the ponds are netted. In a letter dated December 22, 2023, CEC approved the use of the PittBoss evaporators. In

February 2024, MSC installed four PittBoss evaporators in the alpha east pond. The CEC instructed MSP to monitor the effects that the evaporators have on birds. Birds were not observed interacting with the sprayers during operation. Since the completion of netting over the ponds, this is no longer a concern.

After several months of operation, MSP ceased operation of the PittBoss evaporators on 8/16/24 due to low efficiency.

4.2 Deterrent Deployment

CPM Dale Rundquist sent an email on May 13th, 2016, approving MSP's BIO-19 Adaptive Management request to install BirdGard at the evaporation ponds. MSP installed BirdGard on July 27th, within 60-days after CPM approval (May 13th). The propane cannon deterrents were replaced by the installation of BirdGard.

The BirdGard and Eagle Eyes were removed from the ponds to accommodate the installation of the netting at each pond.

4.3 Transect Surveys

Transect surveys were discontinued as the ponds were netted.

4.4 Fatality Monitoring & Pond Netting

Netting over Beta West Pond was completed in October 2021. Installation of netting on the remaining ponds was scheduled to begin in early January 2023. In February 2023 MSP became aware that the netting contractor was lacking critical California documentation to be able to work at the site and suspended the project until the contractor provides the necessary documents. MSP informed CEC, USFWS, and the DB about the unexpected obstacles with the netting project on February 10th and requested an extension to complete the netting after the bird breeding season. MSP subsequently contracted with a new netting contractor.

Installation of netting on the Beta East Pond began in October 2023 and was completed in late December. Installation on the Alpha West Pond was completed at the end of March 2024 and at the Alpha East Pond at the end April 2024.

The DB and/or MSP personnel conducted weekly inspections of the netting at each of the ponds for holes or tears. Small holes that were discovered in the beta west netting where the netting rubs on the support hardware were repaired as necessary.

The ponds were surveyed at least monthly by the DB and weekly by the DB and/or MSP personnel for fatalities and trapped, stranded, and/or injured birds. No live stranded birds associated with the netting were observed during the reporting period.

During the reporting period a variety of small birds were observed inside the pond netting. Observations included Least Sandpiper, Savannah Sparrow, Bell’s Sparrow, Horned Lark, American Pipit and Yellow-rumped Warbler. American Pipits, Yellow-rumped Warbler and the Bell’s Sparrow were observed escaping through the netting mesh. All birds presumably found their way out of the netting as they were eventually no longer seen, and no carcasses were located. All were apparently healthy and foraging on insects near the water’s edge and the discharge pipe.

During the reporting period a total of seven fatalities were documented associated with the ponds/pond netting (Table 1). The DB observed individual and small flocks of waterfowl landing on, resting and taking off from the netting over the ponds without issue. While entanglement may have been a cause of death for some individuals, the DB did not observe any evidence of entanglement. The loons and grebes likely died from injury and/or exposure resulting from collision with the netting.

Date	Species	# of Individuals	Location
10/1/24	American Coot	1	Alpha West
10/28/24	Western Grebe	1	Alpha East
10/28/24	Common Loon	2	Alpha
11/5/24	Eared Grebe	1	Alpha East
11/8/24	Unidentified waterfowl	1	Alpha West

*At the evaporation ponds is defined as within the evaporation pond perimeter fence: on the ground surrounding the ponds, on the pond liner, or in the evaporation pond water.

4.5 Lake Tank Water Storage

In January 2024, CEC issued an authorization to MSP for the installation and use of eight Lake Tank water storage tanks. Two tanks were installed in Alpha power block area and two in the Beta power block area. Four additional tanks were subsequently installed: two in Alpha east, east of the evaporation ponds and two in Alpha west. In early November 2024 the two tank in the alpha power block and one of the tanks in alpha west were removed. The tanks are netted to comply with BIO-19 and are being monitored by the DB to ensure that wildlife do not become entangled in the netting or trapped in the tanks. To date there have been no issues and wildlife have not been observed interacting with the tanks.

4.6 Water Quality

Ninyo & Moore will provide (under separate cover) the results of routine water quality testing conducted in accordance with the Detection Monitoring Program and Ground Water Monitoring Plan.

5 Conclusion and Recommendation

Netting of the ponds as a final deterrent was completed during April 2024. To date netting has shown to be an effective deterrent effectively reducing, but not eliminating avian fatalities. MSP will continue to monitor the ponds to determine if netting results in other adverse impacts such as strandings, entrapment or injuries.

6 References

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